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Southeast Asian Studies, Vol. 5, No. 3, December 2016, pp. 443-462.

(<Special Focus> “Global Powers and Local Resources in Southeast Asia: Political and Social Dynamics of Foreign Investment Ventures,” edited by Akiko Morishita)

How to Cite: Phua, Kai Lit. Rare Earth Plant in Malaysia: Governance, Green Politics, and Geopolitics. In “Global Powers and Local Resources in Southeast Asia: Political and Social Dynamics of Foreign Investment Ventures,” edited by Akiko Morishita, special focus, *Southeast Asian Studies*, Vol. 5, No. 3, December 2016, pp. 443-462.

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Rare Earth Plant in Malaysia: Governance, Green Politics, and Geopolitics

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A rare earth elements (REE) extraction plant was built and began operating in Gebeng, Malaysia (near the city of Kuantan), from early December 2012. This plant, slated to be the world's largest when it operates at full capacity, is very controversial in Malaysia. Various factors appear to have influenced the setting up of this foreign-owned REE extraction plant, although the source of its raw material is thousands of kilometers away in the desert of Western Australia. This article examines and discusses the reasons why the Malaysian authorities approved the highly controversial project despite the fear of the local community that it would have significant negative impacts on the environment and the health of the public, and despite major protests (some of which were nationwide) against the project. The decision by the Malaysian authorities to approve it was probably due to factors such as the importance of rare earth metals in high-technology production; geopolitical considerations, with China dominating and supplying most of the market; high rare earth prices because of actions taken by the Chinese authorities; differences in environmental laws and their enforcement between Malaysia and Australia; and poor governance and lack of citizen input into public decision making in Malaysia. This article demonstrates how a seemingly local issue—specifically, strong objection by local residents to an industrial project—is linked to broader issues such as governance, regional and national politics, and the geopolitics of access to critically important mineral resources. It also discusses various ethical issues in relation to the controversial project.

Keywords: rare earth, governance, environmental politics, environmental ethics, Malaysia

I Introduction

Foreign investment in the mining sector in developing countries can give rise to bitter conflict between local residents on the one hand and the investors and their supporters (including host government authorities) on the other. These conflicts are often fueled

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by fears of—or actual experience with—serious damage to the environment, negative effects on human health, and negative impacts on livelihoods and property values. Sometimes such investment may even lead to divisions among the residents themselves if some think they will benefit materially from it.

Hazardous wastes have been defined as wastes that “have the potential to cause harm to human health and the environment if they are improperly treated, stored, transported, or inadequately disposed of” (British Medical Association 1991). Mining operations often generate wastes in large quantities, some of which can be classified as “hazardous wastes.”

In theory, environmental and public health standards and their effective enforcement can protect local communities against the negative effects of foreign investment in sectors such as mining. However, it has been noted that in many developing countries standards may look good on paper but enforcement is often problematic because of issues such as lack of resources, inadequate training, or corruption on the part of local pollution control officials (Newell 2008; Sahabat Alam Malaysia n.d.). A related concern is the suspicion that poor enforcement or inadequacy of environmental regulation can be used by transnational corporations to locate the more hazardous or highly polluting of their activities in poorer developing countries (Newell 2008).

In their review of the literature on global environmental governance, Frank Biermann and Philipp Pattberg (2008) argue that it increasingly involves the participation of actors that were previously active mainly at the subnational level. Thus, governance today involves not only environmentalists, networks of experts, government regulatory bodies, and multinational corporations, but also other agencies such as intergovernmental organizations and international courts. Recent conflicts over the possible impact of specific industrial foreign investment projects on the environment and health in Malaysia have seen the involvement of non-Malaysian (Australian) environmentalists and European experts (Oko Institut 2013) as well as international organizations such as the International Atomic Energy Agency (IAEA 2011).

In a similar vein, Maria Carmen Lemos and Arun Agrawal define environmental governance as “. . . the set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes. . . . It includes the actions of the state and, in addition, encompasses actors such as communities, businesses, and NGOs” (Lemos and Agrawal 2006, 298).

Recent conflicts over environmental governance in Malaysia have involved a wide range of actors. For example, the conflict over the Australian-owned rare earth elements (REE) processing plant in Gebeng has drawn in environmentalists and local residents as well as public sector regulatory bodies, individual politicians, political parties, scientists

and academicians, the courts, and even ministries that normally do not deal with environmental and health issues, e.g., the Ministry of International Trade and Industry.

Why did the Malaysian authorities approve the highly controversial project despite the fear of the local community that it would have a significant negative impact on the environment and public health, and despite major protests (some of which were nationwide) against the project?

Adnan A. Hezri's (2011) view on environmental governance in Malaysia is that it can be greatly improved. For example, he notes that there may be a lack of coordination amongst various government agencies dealing with environmental issues, and the policies of the federal government and individual state governments can sometimes contradict each other. More than that, I argue in this paper that the approval of the project by the Malaysian authorities (especially the Atomic Energy Licensing Board or AELB, located within the Ministry of Science, Technology and Innovation), the construction of the plant, its operation under the two-year temporary operating license (TOL), and the resulting controversy are due to various factors, including the importance of rare earth metals in high-technology production to many developed nations (including Japan); geopolitical considerations, with China supplying 97 percent of the market (Hurst 2010); high rare earth prices when the project was launched because of actions taken by the Chinese authorities; differences in environmental laws and their enforcement between countries; and poor governance and lack of citizen input in public decision making in developing countries such as Malaysia.

II The Controversial REE Extraction Project in Gebeng, Malaysia

Rare earth elements such as lanthanum, cerium, and neodymium are a group of strategically important metals that are used in the production of high-technology equipment (including those with military applications) and, ironically, also in green technology such as wind turbines. REE production in Baotou, China, has been associated with significant environmental damage (Hurst 2010). Partly because of rare earth metals' strategic importance and the dominance of China as a source of them, local political conflict over potentially harmful and environmentally damaging mining and processing activities associated with REEs could conceivably also get entangled in geopolitics.

A foreign-owned rare earth elements extraction plant began operating in Gebeng, a small town near the city of Kuantan, the state capital of Pahang state, Malaysia (see Fig. 1), in early December 2012. This plant is owned by an Australia-based company, Lynas Corporation. The plant is a subject of great controversy and has energized the



Fig. 1 Map of Malaysia (showing location of Kuantan)

Source: Adapted from Wikimedia Commons.

environmental movement in Malaysia. Basically, the plant imports its ore from thousands of kilometers away, in Western Australia, processing it in Malaysia and then selling the resulting REE to overseas customers. At the same time the plant owners enjoy a 12-year tax holiday. Meanwhile, there are no concrete plans for long-term waste management except for vague assertions that the waste (which includes radioactive thorium and uranium) can be processed into by-products that can be sold on the market. Western Australia authorities have explicitly ruled out the possibility of taking back any of the waste generated (Sta Maria 2012).

Gebeng lies within the Kuantan metropolitan area (population 700,000) and hosts a major industrial estate with many different foreign-owned factories. It is located near the port, but the city of Kuantan actually lies about 25 kilometers farther south (Pahang State Development Corporation 2012). Major foreign companies that have built chemical and petrochemical plants at Gebeng include BP, Kaneka, and BASF. Some of these are joint ventures with Petronas, the Malaysian national petroleum corporation.

The public authority tasked with attracting foreign investment to the Gebeng industrial zone proclaims that its

excellent infrastructure such as a 9-kilometre common pipe-rack connects the petrochemical plants of Gebeng Industrial Estate to and from the tank farm facilities at Kuantan Port and its liquid chemical berths to facilitate safer and faster transportation of petrochemical products between the two areas. (*ibid.*)

Improperly regulated petrochemical plants can have a significant negative impact on surrounding areas. Critics—the most prominent groups opposing the project being Save Malaysia, Stop Lynas (SMSL; Save Malaysia, Stop Lynas 2014) and Himpunan Hijau

Table 1 The Process of Rare Earth Elements (REE) Extraction

| | |
|--------|--|
| Step 1 | Cracking and Leaching <ul style="list-style-type: none"> • Rare earth concentrate is mixed with sulfuric acid and cracked in a rotary kiln to convert it to rare earth sulfate. • Water is added in the leaching stage, and impurities in the form of iron phosphogypsum are removed. The solution advances to the neutralization stage to produce a rare earth-rich solution as feed to solvent extraction. |
| Step 2 | Solvent Extraction <ul style="list-style-type: none"> • <i>Upstream Solvent Extraction</i>: To separate light rare earths (lanthanum, cerium, praseodymium, and neodymium—LCPN) and heavy rare earths (samarium, europium, and gadolinium—SEG—and other heavier rare earths—HRE): <ol style="list-style-type: none"> i) SEG/HRE extraction ii) LCPN extraction iii) HRE solution iron removal process • <i>Downstream Solvent Extraction</i>: <ol style="list-style-type: none"> i) Didymium extraction (lanthanum cerium/praseodymium neodymium separation) ii) Cerium extraction (lanthanum/cerium separation) iii) Didymium purification (didymium/samarium separation); samarium is returned to the SEG product. |
| Step 3 | Product Finishing <ul style="list-style-type: none"> • In the final stage, rare earth elements are precipitated as carbonates, hydroxides, or oxalates. Some are calcined to the respective oxides. |

Source: Lynas Corporation (2012).

(Green Gathering) (Himpunan Hijau 2014)—fear that an REE plant would further increase the risk to the environment partly because of the chemicals used in the process of rare earth extraction. Another reason is that when production reaches full capacity of about 22,000 tonnes of REE per annum at the Gebeng factory, this plant will be the world's biggest rare earth plant and will therefore generate a huge amount of waste too.

Processing agents and chemicals that will be used in rare earth extraction at the plant (Lynas Corporation 2012) include ammonium bicarbonate, oxalic acid, sulfuric acid, hydrochloric acid, magnesium oxide, kerosene, and trichloroethylene. All these chemicals are known to be hazardous to human health. As for the waste that will be produced, it will include radioactive materials such as thorium and uranium and the products of their radioactive decay, e.g., radium. Some of the isotopes of thorium and uranium have very long half-lives (extending into millions and even billions of years) and therefore will be present in the immediate environment as a result of REE extraction unless they are removed and stored safely elsewhere.

Final REE products include lanthanum-cerium carbonate, lanthanum carbonate, samarium europium gadolinium, and heavy rare earths carbonate as well as neodymium and praseodymium (didymium) oxide (see Table 1).

The plant at Gebeng is controversial because of the following three reasons. First,

it processes rare earth-containing ore (lanthanide concentrate) that is imported all the way from its source at Mount Weld in Western Australia and Australian governmental authorities have stated explicitly that they will not accept any return of the waste that is produced (Sta Maria 2012).

Second, Lynas Corporation, the company that owns the plant (called Lynas Advanced Materials Plant, or LAMP) has no long-term waste management plan in place although the waste will include radioactive materials such as thorium and uranium and the products of their decay. No permanent disposal facility (PDF) has been built to store the waste, and no plan for eventual decommissioning of the plant exists. The building of such a facility and a plan was recommended by a panel of experts from the International Atomic Energy Agency (IAEA 2011).

Meanwhile, the main Malaysian governmental body responsible for regulating the project, the AELB, has arranged a financial scheme with the company whereby 0.05 percent of yearly revenues will be paid to the AELB. In response to criticism about a financial conflict of interest, the director general of the AELB claimed that this money would be used only to verify the company's waste management studies by independent researchers (Yow 2012). Yet, no detailed environmental impact assessment or health impact assessment has been done for the plant in Malaysia (Teoh and Palani 2012).

Lastly, huge amounts of waste will be produced. It should be pointed out that although environmental contamination by rare earth metals can have an impact on human health, the substances are not especially toxic (Hirano and Suzuki 1996). It is actually the storage and disposal of the waste associated with REE extraction that is of primary concern and the source of controversy.

According to Lynas Corporation, current plans are to have liquid discharge of 500 tonnes per hour into the nearby Balok River, which flows into the South China Sea. The company also claimed, in response to fierce criticism of its lack of a long-term waste management plan, that the waste could be processed into commercial by-products that could be sold on the market (Lynas Corporation 2011). These include synthetic gypsum for the manufacture of plasterboard and cement; magnesium-rich gypsum fertilizer for plantations, crops, and soil remediation; and carbon-enriched magnesium gypsum fertilizer to rejuvenate acidic soils. The remaining material allegedly can either be "disposed safely in a secure municipal landfill" if it is classified as non-scheduled waste or "disposed at a licensed facility" if classified as scheduled waste by the Department of the Environment (*ibid.*).

The estimates made by Lee Bell (2012) based on the experience of REE plants in Baotou show a different picture. Bell made the following estimates of the huge amount of waste that will be produced per year when the plant reaches full capacity. As radio-

active waste, 22,500 tonnes of radioactive waste residue (containing water) will be produced. As non-radioactive waste, 191.25 tonnes of fluoride compounds, 292.5 tonnes of flue dust particulates, 1,687,500 cubic meters of acidic wastewater, and 216–270 million cubic meters of waste gas (containing nitrogen oxides, carbon monoxide, sulfur dioxide, hydrogen fluoride, dust concentrate, and sulfuric acid) will be produced.

III Factors Affecting the Approval of the REE Extraction Plant

Why did the Malaysian authorities approve this highly controversial project despite the public fear that it would have a significant negative impact on the environment and the health of the public?

Rare earth metals are of major importance in high-technology production to many developed nations. The term “rare earth” is a misnomer since such metals are actually abundant. But the challenge for rare earth production is that the metals tend not to be found in concentrated deposits, unlike other metals. Rare earth metals are used in the manufacture of high-tech products such as mobile phones, aircraft engines, and advanced weapons systems (e.g., missiles) and, ironically, also in green technologies such as catalytic converters, hybrid cars, and wind turbines. Recognition of their strategic as well as commercial importance has led to efforts by governments and companies to either stockpile REEs (Grasso 2012) or engage in long-term contracts with companies supplying REEs. M. A. B. Siddique (2009) analyzed the importance of Western Australia as a source of raw materials for industrial production by Japanese companies. The fact that the plant owners in Malaysia have signed contracts with Japanese companies to supply the latter with REEs is simply a continuation of this relationship. Mitsubishi UFJ Financial Group is also a substantial shareholder in the company that owns the Malaysian REE extraction plant (Lynas Corporation 2012).

In terms of access to REEs, there are also geopolitical considerations since China supplies 97 percent of the world market for rare earth metals (Hurst 2010). Valerie Grasso (2012) noted the following:

In 2010, a series of events and press reports highlighted what some referred to as the rare earth “crisis.” Some policymakers were concerned that China had cut its rare earth exports and appeared to be restricting the world’s access to rare earths, with a nearly total U.S. dependence on China for rare earth elements, including oxides, phosphors, metals, alloys, and magnets.

Additionally, some policymakers had expressed growing concern that the United States had lost its domestic capacity to produce strategic and critical materials, and its implications for U.S. national security.

According to the *New York Times*, in September 2010

China imposed a two-month embargo on rare earth shipments to Japan during a territorial dispute, and for a short time even blocked some shipments to the United States and Europe. Beijing's behavior, which has also included lowering the export limit on its rare earths, has helped propel world prices of the material to record highs—and sent industrial countries scrambling for alternatives. (Bradshaw 2011)

Such actions undertaken by the Chinese authorities (under the guise of closing illegal rare earth mines in China in order to deal with environmental problems), and the resulting effect on prices of rare earth metals, has raised the financial incentive for producers outside China to increase production of REEs for sale on the world market.

According to a British newspaper, some experts believe that another motive for Chinese export restriction of rare earth metals is to force foreign high-technology manufacturers to bring their factories and technological secrets to China. Thus, Dudley Kingsnorth, an independent rare earths marketing consultant, is quoted as saying, “The Chinese will not deny the rest of the world rare-earths but the price will be that the West needs to move its manufacturing facilities to China in order to get access” (Jones 2010).

Differences in environmental standards and enforcement vigor between countries such as Australia and Malaysia also appear to be a factor in the interesting phenomenon whereby REE-containing ore is mined in Western Australia but extraction of the metals is carried out thousands of kilometers away in Malaysia. Lynas chose Malaysia to site its processing plant although the company also had the option to do so in Australia. Table 2 illustrates differences (as required by regulatory authorities) in REE production and the handling of waste in the two countries.

It is interesting to note that Australian standards forbid the accumulation of waste at the refinery site, while in Malaysia waste can be stored “temporarily” on-site. In fact, Australian standards require waste to be shipped to the burial site immediately as it is produced. Furthermore, Australia's total containment policy mandates that liquid waste needs to undergo evaporation, thus leaving only solid waste for safe disposal. In contrast, in Malaysia the rare earth extraction plant is allowed to discharge liquid waste at the rate of 500 tonnes per hour into the Balok River, which flows directly into the nearby South China Sea, as described previously.

The Gebeng plant is located on land that is prone to flooding. This constitutes a significant environmental risk since floods can spread hazardous waste widely into surrounding areas. The Gebeng-Kuantan area is subjected to the heavy rains of the Northeast Monsoon at the end of every year. The project site was flooded (to a depth of just a few centimeters) because of heavy rain as the plant was being built. Kuantan city

Table 2 Differences in REE Production and the Handling of Waste in Australia and Malaysia

| Australia | Malaysia |
|--|---|
| Waste is buried at Mt Weld, where it came from. No accumulation of waste at the refinery; the waste is shipped to the burial site immediately as it is produced. | No permanent waste disposal plan. Waste is temporarily dumped on-site. |
| Distance between Mt Weld and the refinery site at Meenaar is 880 km by road. | Raw materials are transported 1,000 km by land and more than 4,000 km by sea to Gebeng. |
| Nearest population center is 35 km away, with only 1,500 inhabitants. | 700,000 people live within 35 km. |
| Waste is diluted to 2.3 Bq/g. | Waste is not diluted; radioactivity is nearly 3 times higher, at 6.1 Bq/g. |
| Impermeable ponds, progressively buried when full. | Waste is temporarily covered by an “unspecified” method. |
| Located in the desert away from the aquifer; annual rainfall 234 mm. | Located on reclaimed swampland; underground water is just 0.95–3.5 m below the surface; annual rainfall 2,860 mm; area prone to flooding. |
| Total containment policy; all wastewater is evaporated, and all leftover residue is returned at Mt Weld. | 500 tonnes/hour of water is discharged to the South China Sea. |

Source: *Malaysian Insider* (2012a).

also suffered a major flood, its worst ever, in December 2012 (*The Star*, December 24, 2012).

There appears to be poor governance and lack of citizen input in public decision making when it comes to the Gebeng REE plant. “Poor governance” can be defined as the failure of the authorities to adhere to the laws of the land or to follow relevant regulations and administrative procedures. Many local residents were unaware about plans to build the factory until the *New York Times* published an article about it in March 2011 (Bradshaw 2011). When citizen groups formed to voice their opposition to the project, the governmental authorities responded in ways that failed to alleviate public concerns.

For example, the government invited a team of experts from the International Atomic Energy Agency (IAEA) of the United Nations to evaluate the project. However, many of the recommendations of the IAEA team were not implemented, e.g., the recommendations that the project should come up with a long-term waste management plan, build a PDF to handle the waste that would be produced, and draw up a decommissioning plan for the factory (IAEA 2011).

Another example of poor governance and inadequacy of government action would be the approval of the TOL (valid for two years of production) in February 2012 and its issuance in December 2012, although a long-term waste management plan did not materialize and there were no plans to build a PDF for the waste. Critics of the project tend to view this as a ploy to get the plant built and operating, supposedly on a “temporary”

basis, although the important IAEA recommendations were neglected (S. M. Mohamad Idris 2012).

In January 2012, a major nongovernmental organization in Malaysia called the Consumers Association of Penang voiced its strong opposition to the project and criticized the Malaysian authorities for poor governance and non-transparency with respect to the handling of the REE project. The association urged that no TOL should be issued for the project. It also claimed that various government agencies were acting in an uncoordinated manner (CAP 2012).

In response to criticisms such as these, ministers from four ministries (International Trade and Industry; Science, Technology and Innovation; Natural Resources and Environment; Health) declared jointly that “[t]he Temporary Operating License (TOL) granted to Lynas requires as a specific condition that the company removes all the residue generated by LAMP out of Malaysia. This includes all products made from the residue” (Ministry of International Trade and Industry 2012).

Shortly after, one of the ministers made the seemingly contradictory statement that commercial by-products made from the waste could be sold in Malaysia itself (*New Straits Times*, December 12, 2012). This was after the local managing director of the plant had publicly announced that international law forbade the export of hazardous waste out of Malaysia and that the company would process the waste into marketable commercial by-products called “synthetic aggregate” (Tasker 2012).

Pro-project Malaysian authorities include the prime minister and the chief minister of the state of Pahang. Both Prime Minister Najib Razak and Chief Minister Adnan Yaakob have been defending the project throughout the controversy. Najib said, “We have studied the Lynas project and we have come out with scientific evidence endorsed by local and international experts, that the Lynas plant and rare earth residue are safe” (*Malaysian Insider* 2012b).

The main Malaysian governmental bodies responsible for regulating the project, the Atomic Energy Licensing Board (part of the Ministry of Science, Technology and Innovation) and the Department of Environment (part of the Ministry of Natural Resources and Environment), appear to be consistent defenders of the project. For example, during the worst-ever floods in Kuantan in December 2013, the AELB reassured the public that the “residue” (i.e., waste generated by REE production) storage areas and retention ponds had not been affected by the floods; that radioactive material would not leak into ground and underground water; and that even if there was flooding, there would be no risk of radioactive waste leaking to the surrounding area. However, the AELB also made the contradictory statement that any radioactive material that leaked would be “diluted” by floodwaters to safe concentrations (Lim 2013).

IV Anti-Lynas Movement

In the face of such inconsistent and even contradictory remarks from the Malaysian authorities, it is not surprising that the negative reaction of local residents and the larger Malaysian public has been strong. One suspicion is that Malaysia will be used as a permanent dumping ground for improperly stored toxic waste (both radioactive as well as non-radioactive).

The Malaysian Medical Association (MMA) expressed its concerns about the project in a public statement released in July 2011. In fact, the MMA declared bluntly that it believed that

there remain many unanswered and unresolved questions and concerns regarding the safety and the implementation of the Lynas rare earth refinery plant in Gebeng, . . . we remain deeply concerned that public safety and health concerns have not been adequately met. . . . We need evidence that the plant will be totally failsafe and a guarantee that no harm will be caused to our people . . . the MMA joins numerous individuals, community groups and NGOs in urging the government to stop the Lynas project in order to ensure the protection of our citizens' health and the safety of our environment. (Malaysian Medical Association 2011)

A scientific study commissioned by SMSL from the *Oko Institut* (Institute for Applied Ecology, a Germany-based scientific consultancy firm), which was released in January 2013, concluded bluntly that the proposed processing of waste from the rare earth plant into commercially viable by-products was “scientifically and technically nonsense, and in respect to the so posed risks, careless” (*Oko Institut* 2013). The study also declared that the operation of an REE extraction plant that generated huge amounts of waste like the Gebeng factory “should only be (temporarily or permanently) allowed if the PDF is available, otherwise another dangerous legacy is created and the burden of caring about and disposing these wastes is unacceptably shifted to future generations” (*ibid.*). The study also pointed out severe technical deficiencies with respect to the planned method of “temporary storage” of waste on-site.

Thus, there are multiple areas of concern associated with the project, including the treatment of waste (e.g., no evaporation of wastewater such that only solid waste would remain), storage of waste (“temporary” storage on-site under technically deficient conditions), and disposal (discharge into the nearby river and into the air, with other waste converted into allegedly safe commercial products that can be sold on the market in Malaysia).

All these issues have created worry among local residents and also given grounds for suspicion among the Malaysian public that there could be a financial conflict of interest on the part of ruling regime politicians and the Malaysian authorities and their relevant

regulatory agencies vis-à-vis the REE extraction plant project. The financial arrangement between Lynas and the AELB mentioned earlier casts doubt on the latter's ability to regulate the former in a totally objective manner. Another reason for suspicion is the mention in 2011 (which later disappeared) of an "indemnity fund" set up by the company in cooperation with Malaysian governmental authorities (Chong 2011a). Details on how much was paid into this indemnity fund and who is managing it have not been forthcoming from the parties involved.

Activist groups are continuing their opposition to the plant in various ways. The main groups include SMSL, Himpunan Hijau, and the Stop Lynas Coalition. SMSL has chosen a more legalistic route, with challenges filed using the judiciary system. It has not given up on the strategy of using legal proceedings although the plant has been operating since December 2012. Nevertheless, SMSL has also protested at the headquarters of the parent company in Sydney and attended the parent company's shareholders' meeting to highlight the concerns of Kuantan residents about the entire project. The group has also sought support from green groups and sympathetic politicians in Australia. One of the SMSL leaders said that there has been a "lost [*sic*] of faith and trust on the government brought about by their past responses to queries and appeals by the affected communities" with the phenomenon of "irregular approval procedures" for the REE project.¹⁾

Himpunan Hijau has engaged in more dramatic direct action, including organizing demonstrations at the site of the plant and carrying out publicity-generating events such as the "Green Walk" protest march from Kuantan to Kuala Lumpur, which grew into a mass demonstration with an estimated 20,000 protesters at its final destination. After this, it organized a protest motorcade that went in the other direction, i.e., from Kuala Lumpur to Kuantan. One of the leaders of Himpunan Hijau, Wong Tack, even stood as a candidate for a Pahang parliamentary seat in the Malaysian general election of 2013 (Anisah 2013). Wong Tack was narrowly defeated by the candidate from the ruling Barisan Nasional (BN, National Front). The light green T-shirt with a logo produced by Himpunan Hijau has become an iconic symbol and features prominently at mass demonstrations in Malaysia that push for clean elections and responsive, accountable government.

Activists have been making use of traditional face-to-face meetings as well as information and communications technology (including independent online mass media that are not linked to the Malaysian government) to mobilize opposition both in Malaysia and

1) From personal communication between the author and Bun Teet Tan, Save Malaysia, Stop Lynas (SMSL). Kuala Lumpur, June 23, 2014.

overseas in Australia. Opposition political parties in Malaysia such as Parti Keadilan Rakyat (People's Justice Party), Parti Islam Se-Malaysia (Islamic Party of Malaysia), the Democratic Action Party, and Parti Sosialis Malaysia (Malaysian Socialist Party) have lent their support to the anti-Lynas movement. The member of parliament for Kuantan—from Parti Keadilan Rakyat—has also lent her strong support for the movement opposing the rare earth extraction plant.

The REE plant has become a major political issue in the state of Pahang, where Gebeng is located. Pahang is considered to be a BN stronghold, and the controversy has weakened support for BN in this state. For example, in the May 2013 general election the federal parliamentary seat for Kuantan was won by the opposition. Of the five Pahang state assembly seats under Kuantan, four were won by the opposition (*The Star*, May 9, 2013). The strong support given to the anti-Lynas movement by the opposition party member of parliament for Kuantan, the Right Honourable Fuziah Salleh, has boosted her popularity and shot her into national prominence. Fuziah Salleh pointed out that the government of the neighboring state of Terengganu had actually turned down a proposal by Lynas to build the REE plant in the state in 2007 and demanded to know why Pahang had chosen to allow the building of the plant within its borders (Chong 2011b). Parliamentarian Fuziah Salleh and Pahang State Assembly Person Andansura Rabu have been especially active in opposing the project and in supporting anti-Lynas environmental activists.

The Gebeng rare earth plant controversy has not only weakened support for BN, especially in the Kuantan area, but has also energized the green movement in Malaysia. Thomas Rudel, J. Timmons Roberts, and JoAnn Carmin (2011) note that local residents may turn to foreign environmental activists for help in their environmental battles.

However, they note that the effectiveness of this strategy depends to a certain degree on

the preferences of the international NGOs for working in familiar democratic political settings. . . . The selective engagement of transnational actors means that domestic environmental actors in some of the nations with the greatest needs have difficulty enlisting help from external bodies and pressuring their governments to adopt policies that will reverse trends in resource depletion and environmental degradation. (Rudel *et al.* 2011)

The anti-Lynas activists have had some success in enlisting help from Australian environmental groups and sympathetic politicians from the Australian Greens political party. Help has been forthcoming also from the overseas Malaysian community resident in Australia and from ex-Malaysians (now Australian citizens). However, the mining lobby is strong in Western Australia, and this strategy does not seem to have made much headway.

Robin Chapple, an Australian Greens member of the Legislative Council of Western Australia, declared in response to the approval of the TOL:

For all intents and purposes, this approval looks like the sanctioning of an Australian mining company making use of lax environmental controls and governance arrangements in a developing country. To my mind it has not gone through a rigorous environmental process and should not have been issued. This is a poor representation of Australian notions of “fair play” and good corporate citizenship and one that it seems our State Government is paying little mind to. (Guthrie 2012)

Major political parties in Australia, such as the Australian Labor Party, have been notably silent on the controversy. Thus, Lynn McLaren of the Western Australian Greens, another member of the Legislative Council of Western Australia, declared, “It is unacceptable for the Australian Government to wash its hands of responsibility for the effects of unsustainable mining, whether they are in our own backyard or that of our neighbours” (*ibid.*).

V Ethical Issues Fueling the Controversy

There are ethical issues associated with the siting and operation of the REE plant in Malaysia rather than in Western Australia, since the latter is the source of the rare-earth-containing ore. Local residents oppose the project partly because they were not informed about the project beforehand. Iris Young’s principle of “participatory justice” (Young 1983)—i.e., the right to take part in collective decisions that affect one’s interests—has been violated here. On the other hand, some local supporters of the project—including politicians associated with the ruling BN government—argue that it is generating jobs that pay relatively high wages. Thus, project supporters claim that activists opposing the plant are infringing on the rights of others to make a decent living.

Supporters of the project sometimes argue that the technological spin-offs may be considerable. Ethical questions to be pondered here include the issue of overall costs (direct as well as indirect) versus overall benefits, the distribution of costs and benefits across social groups and across the two countries, benefits arising now versus benefits arising later, and so on. The fact that the plant is wholly foreign-owned and that it has been granted a 12-year tax holiday has led activists to believe that local residents are getting the raw end of the deal, especially in terms of having to bear the health and environmental costs arising from the toxic waste that will be generated (Lit 2014).

The principle of participatory justice is of major importance especially in light of Malaysia’s negative experience with the earlier and much smaller REE extraction plant

built at Bukit Merah on the west coast of Peninsular Malaysia. This plant, owned by a company called Asian Rare Earth (partly owned by Japan's Mitsubishi Corporation), extracted an REE called yttrium from monazite ore. It operated from 1982 to 1994 in spite of protests from residents of Bukit Merah and nearby communities. It was closed by court order in 1992, but the verdict was suspended and eventually overturned by the Supreme Court in 1993. The plant finally closed a year later due to public pressure (including pressure in Japan). Critics argue that there is a link between the waste produced by the plant and physical defects in newborn babies. Furthermore, eight cases of leukemia occurred over five years among a population of only 11,000 people (Koh 2012).

An article on lessons to be learned from the Bukit Merah project declared,

It was a saga that ran for more than two decades, and it pitted the villagers, helped by various civic organisations, against big business and powerful state authorities. An exercise to decommission the ARE [Asian Rare Earth] plant finally began in 2003, but the work to decontaminate the area is still going on and is estimated to cost RM300 million. (*ibid.*)

The Proximity Principle, i.e., the disposal of hazardous waste should be as near to its place of production as possible (Landon 2006), is also violated by the “temporary storage” of waste on-site in Malaysia before it is “processed” into commercial by-products. Other harm that will arise includes economic and psychological harm. Economic harm caused to people employed in the fisheries and tourism sectors, such as loss of livelihood, may not be compensated adequately.

The Gebeng project may also generate externalities for neighboring countries in the form of significant pollution of the South China Sea. A vast amount of waste will be produced and discharged into it. Possible health threats to residents of countries adjoining the South China Sea include airborne fine particulate waste, lead contamination (since process wastewater from cerium production will contain this material), and contamination—radioactive as well as non-radioactive—of seafood caught in the South China Sea. Other questions to be pondered include the possibility of significant damage to mangrove swamps, damage to coral formations, and eutrophication (algae blooms leading to oxygen depletion and death of marine life).

Psychological harm refers to any negative impact of the project on the mental health of nearby residents. One could also argue that the project will have an unfair impact on future generations yet unborn as it will add to the environmental burden they will have to bear (Jamieson 2008).

If the health and welfare of residents are negatively affected, will residents be adequately compensated? And by whom will they be compensated? These will be the next issues surrounding the REE plant in Gebeng.

VI Conclusion

Various factors appear to have led to the approval of the controversial REE plant in Gebeng by the Malaysian authorities in spite of strong opposition at both the local and national levels. I argue that the decision to build and operate the plant in Gebeng and the decision by the Malaysian authorities to approve it are probably due to factors such as the importance of rare earth metals in high-technology production and the resulting necessity of ensuring continued access to REE; geopolitical considerations, with China supplying 97 percent of the market and its seemingly politically motivated actions with respect to supply restrictions of REE on the international market (Hurst 2010); high rare earth prices because of such actions taken by the Chinese authorities; differences in environmental laws and their enforcement between Australia and Malaysia; and poor governance and lack of citizen input into public decision making in developing countries such as Malaysia.

Baotou has paid a heavy price in terms of environmental damage as a center for REE production in China (*ibid.*). However, the Malaysian authorities approved the Lynas project and continue to support it even though Malaysia has had a prior negative experience with environmental pollution caused by the much smaller foreign-owned rare earth extraction plant (partly owned by Mitsubishi) in Bukit Merah, which closed down in 1994 (Sahabat Alam Malaysia n.d.).

Top political leaders, such as the prime minister of Malaysia and the chief minister of the state of Pahang, continue to doggedly defend the project in the face of significant opposition from the Malaysian public, e.g., the “Green Walk” protest march from Kuantan to Kuala Lumpur grew into a mass demonstration of an estimated 20,000 protesters at its final destination.

Opposition political parties did very well in the March 2008 general election in Malaysia, with the BN ruling coalition losing its two-thirds majority in parliament for the first time and a number of important states falling under the control of the opposition too. In the May 2013 general election, the opposition parties did even better: the BN was again prevented from winning a two-thirds majority in parliament. Furthermore, the BN share of the popular vote was only 47 percent. However, the BN remained in power at the federal level because the first-past-the-post electoral system allowed it to win more parliamentary seats than the opposition political parties did.

The green movement in Malaysia has been given a strong boost by the controversy through the support of opposition politicians as well as members of the public. In turn, green activists have encouraged members of the public to vote for opposition political parties since the latter, in the shape of the Pakatan Rakyat (People’s Alliance) coalition,

has stated that it will shut down the plant if it comes to power at the federal level (*Free Malaysia Today*, March 15, 2013).

In terms of economics, a 12-year tax holiday has been granted to the foreign investors. Furthermore, only 350 jobs will be created directly. Meanwhile, future damage to the existing labor-intensive local fisheries and tourism industries could be significant, notwithstanding claims by Lynas and its supporters that the REE project will generate spin-offs and even serve as a catalyst in attracting additional REE-related high-technology investments to the area.

The question arises as to whether there is enough democratic accountability in a country like Malaysia. In other words, are the actions of the authorities sufficiently “transparent” to the ordinary citizens of Malaysia, and have they been carried out in conformity with usual practice in parliamentary democracies? Who would ultimately be responsible for the consequences of the action of granting the operating license to the controversial Lynas project? Furthermore, if the worst fears and predictions of the activists (based on the earlier experience with the Bukit Merah plant and the contemporary example of Baotou in China) come true, will those who suffer physical, economic, and psychological harm be adequately compensated? Who will bear the costs of cleaning up the damage to the environment? Meanwhile, the 700,000 people of the Kuantan metropolitan area (in which Gebeng lies) who are caught in the middle of all this can only continue with their protests and strong resistance to the project with the help of their allies from the rest of Malaysia and overseas.²⁾

Accepted: February 10, 2016

References

- Adnan A. Hezri. 2011. Sustainable Shift: Institutional Challenges for the Environment in Malaysia. *Akademika* 81(2): 59–69.
- Anisah Shukry. 2013. Wong Tack to Contest Bentong on DAP Ticket. *Free Malaysia Today*. March 12. <http://www.freemalaysiatoday.com/category/nation/2013/03/12/wong-tack-to-contest-bentong-on-dap-ticket/>, accessed March 13, 2013.
- Bell, Lee. 2012. *Rare Earth and Radioactive Waste: A Preliminary Waste Stream Assessment of the Lynas Advanced Materials Plant, Gebeng, Malaysia*. Bangalov: National Toxics Network.
- Biermann, Frank; and Pattberg, Philipp. 2008. Global Environmental Governance: Taking Stock, Moving Forward. *Annual Review of Environ Resources* 33: 277–294.

2) The REE extraction project was granted a Full Operating Stage License by the AELB on September 2, 2014. Production of REE at the plant is lower than actual capacity because of relatively low prices on the international market. Nevertheless, opposition by project critics continues.

- Bradshaw, Kevin. 2011. Taking a Risk for Rare Earths. *New York Times*. March 8. http://www.nytimes.com/2011/03/09/business/energy-environment/09rare.html?pagewanted=all&_r=0, accessed December 24, 2012.
- British Medical Association. 1991. *Hazardous Waste and Human Health*. Oxford: Oxford University Press.
- Chong, Debra. 2011a. Lynas Says Paid Putrajaya for Toxic Waste Cover. *The Malaysian Insider*. May 21. <http://www.themalaysianinsider.com/malaysia/article/lynas-says-paid-putrajaya-for-toxic-waste-cover>, accessed March 19, 2013.
- . 2011b. Ask Why Terengganu Snubbed Lynas, Fuziah Tells Pahang MB. *The Malaysian Insider*. April 2. <http://www.themalaysianinsider.com/malaysia/article/ask-why-terengganu-snubbed-lynas-fuziah-tells-pahang-mb>, accessed March 14, 2013.
- Consumers Association of Penang (CAP). 2012. Malaysia Not Adhering to International Standards for Lynas. January 11. <http://www.consumer.org.my/index.php/development/environment/520-aelfb-not-adhering-to-iaea-recommendations-on-lynas>, accessed June 26, 2014.
- Free Malaysia Today*. 2013. Pakatan Will Shut Down Lynas, Says Fuziah. March 15. <http://www.freemalaysiatoday.com/category/nation/2013/03/15/pakatan-will-shut-down-lynas-says-fuziah/>, accessed May 2, 2015.
- Grasso, Valerie Bailey. 2012. *Rare Earth Elements in National Defense: Background, Oversight Issues, and Options for Congress*. Washington, DC: Congressional Research Service.
- Guthrie, Shane. 2012. Lynas Having a Laugh at Australia's Political Impotence. <http://www.lynnmaclaren.org.au/lynas-having-laugh-australia%E2%80%99s-political-impotence>, accessed February 6, 2013.
- Himpunan Hijau. https://www.facebook.com/himpunan.hijau?fref=ts&__rev=1024226, accessed June 23, 2014.
- Hirano, Seishiro; and Suzuki, Kazuo T. 1996. Exposure, Metabolism, and Toxicity of Rare Earths and Related Compounds. *Environmental Health Perspectives* 104 (Supplement 1): 85–95.
- Hurst, Cindy. 2010. *China's Rare Earth Elements Industry: What Can the West Learn?* Washington, DC: Institute for the Analysis of Global Security.
- International Atomic Energy Agency (IAEA). 2011. Report of the International Review Mission on the Radiation Safety Aspects of a Proposed Rare Earths Processing Facility (the Lynas Project). May 29–June 3, Malaysia. Vienna: IAEA. <http://www.iaea.org/newscenter/news/pdf/lynas-report2011.pdf>, accessed December 24, 2012.
- Jamieson, Dale. 2008. Environment. In *Issues in Political Theory*, edited by Catriona McKinnon, pp. 313–335. New York: Oxford University Press.
- Jones, Richard. 2010. Exclusive: Inside China's Secret Toxic Unobtainium Mine. *Mail Online*. January 10. <http://www.dailymail.co.uk/news/article-1241872/EXCLUSIVE-Inside-Chinas-secret-toxic-unobtainium-mine.html>, accessed February 6, 2013.
- Koh, Stanley. 2012. Lessons from Bukit Merah. *Free Malaysia Today*. March 21. <http://www.freemalaysiatoday.com/category/opinion/2012/03/21/lessons-from-bukit-merah/>, accessed March 13, 2013.
- Landon, Megan. 2006. *Environment, Health and Sustainable Development*. Maidenhead: Open University Press.
- Lemos, Maria Carmen; and Agrawal, Arun. 2006. Environmental Governance. *Annual Review of Environment and Resources* 31: 297–325.
- Lim, Ida. 2013. AELB: "No Risk" of Radioactive Leaks at Lynas from Kuantan Floods. *Malay Mail Online*. December 7. <http://www.themalaymailonline.com/malaysia/article/aelb-no-risk-of-radioactive-leaks-at-lynas-from-kuantan-floods>, accessed June 25, 2014.
- Lit, Phua Kai. 2014. Seven Reasons Why Lynas Shouldn't Be Granted a Permanent Operating Licence.

- <http://anilnetto.com/economy/development-issues/7-reasons-lynas-granted-permanent-operating-licence/>, accessed May 2, 2015.
- Lynas Corporation. 2012. *Annual Report*. Sydney: Lynas Corporation.
- . 2011. *Lynas-SHE-R-043 Radioactive Waste Management Plan. Rev 4*. Sydney: Lynas Corporation.
- Malaysian Insider*. 2012a. Let's De-politicise the Lynas Issue—Stop Lynas Coalition. March 21. <http://www.themalaysianinsider.com/sideviews/article/lets-de-politicise-the-lynas-issue-lynas-coalition>, accessed December 24, 2012.
- . 2012b. Lynas Corp Must Shift Waste Disposal Site, Says PM. March 2. <http://www.themalaysianinsider.com/malaysia/article/najib-says-will-store-lynas-waste-here-but-away-from-populace>, accessed June 25, 2014.
- Malaysian Medical Association. 2011. MMA Statement on Lynas Rare Earth Plant. July 20.
- Ministry of International Trade and Industry. 2012. Joint Ministerial Statement on Lynas. Kuala Lumpur: MITI. December 10.
- Newell, Peter. 2008. Environment. In *Politics in the Developing World*, edited by Peter Burnell and Vicky Randall, pp. 333–352. New York: Oxford University Press.
- New Straits Times*. 2012. Ongkili: Up to Lynas to Export Residue or Not. December 12. <http://www.nst.com.my/nation/general/ongkili-up-to-lynas-to-export-residue-or-not-1.184938>, accessed December 24, 2012.
- Oko Institut. 2013. Description and Critical Environmental Evaluation of the REE Refining Plant LAMP near Kuantan/Malaysia. <http://www.oeko.de/oekodoc/1628/2013-001-en.pdf>, accessed February 6, 2013.
- Pahang State Development Corporation. 2012. Gebeng Industrial Estate. http://www.investinpahang.gov.my/index.php?ch=en_investinpahang&pg=en_industrialareas&ac=9, accessed March 13, 2013.
- Rudel, Thomas K.; Roberts, J. Timmons; and Carmin, JoAnn. 2011. Political Economy of the Environment. *Annual Review of Sociology* 37: 221–238.
- Sahabat Alam Malaysia. n.d. *Malaysian Environment in Crisis*. Penang: Sahabat Alam Malaysia.
- Save Malaysia, Stop Lynas. <http://savemalaysia-stoplynas.blogspot.com/>, accessed June 23, 2014.
- Siddique, M. A. B. 2009. *Western Australia-Japan Mining Co-Operation: An Historical Overview*. Crawley: Business School, University of Western Australia. http://www.business.uwa.edu.au/_data/assets/pdf_file/0018/260532/09_11_Siddique.pdf, accessed December 24, 2012.
- S. M. Mohamad Idris. 2012. Lynas: AELB Not Adhering to IAEA Recommendations. *Malaysiakini*. January 12. <http://www.malaysiakini.com/letters/186446>, accessed May 2, 2015.
- Sta Maria, Stephanie. 2012. Australia Says It Again: No to Lynas Waste. *Free Malaysia Today*. February 21. <http://www.freemalysiatoday.com/category/nation/2012/02/21/australia-says-it-again-no-to-lynas-waste/>, accessed December 24, 2012.
- Tasker, Sarah-Jane. 2012. Lynas Fights Claims That It Must Export All Waste from Malaysia Plant. *The Australian*. December 11. <http://www.theaustralian.com.au/business/mining-energy/lynas-fights-claims-it-must-export-all-waste-from-malaysia-plant/story-e6frg9df-1226534422694>, accessed December 24, 2012.
- Teoh, El Sen; and Palani, Tarani. 2012. PSC Gives Lynas the Green Light. *Free Malaysia Today*. June 19. <http://www.freemalysiatoday.com/category/nation/2012/06/19/psc-gives-lynas-the-green-light/>, accessed December 24, 2012.
- The Star*. 2013. GE13: Election Results Leave Big Question Mark on Pahang Caretaker MB. May 9. <http://elections.thestar.com.my/story.aspx?file=/2013/5/9/southeast/13084667#.VURSB06sUyA>, accessed May 2, 2015.

- . 2012. Kuantan Hit by One of the Worst Floods in Decades. December 24. <http://www.thestar.com.my/story/?file=%2F2012%2F12%2F24%2Fnation%2F20121224113642>, accessed May 2, 2015.
- Young, Iris Marion. 1983. Justice and Hazardous Waste. *The Applied Turn in Contemporary Philosophy: Bowling Green Studies in Applied Philosophy* 5: 171–183.
- Yow, Hong Chieh. 2012. AELB Denies Profiting from Share of Lynas Revenue. *Malaysian Insider*. February 20. <http://www.malaysianinsider.com/malaysia/article/aelb-denies-profiting-from-share-of-lynas-revenue>, accessed December 24, 2012.