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## Rare Earths



Nelson Ching/Bloomberg News

Updated: March 13, 2012

The term rare earths refers to a group of minerals with chemically similar properties that are important in the manufacture of a wide range of high-technology products. They are used to make a variety of electronic goods, including smartphones and flat-screen televisions, and can be found in specialized industrial products

like drills, components for electric automobiles and military equipment. They are also crucial to new clean energy technologies, ranging from compact fluorescent light bulbs to electric cars to giant wind turbines.

Though the minerals are not strictly speaking rare — and are metals, not dirt — they have become a significant trade issue with China, which mines 95 to 97 percent of the world's supply. Efforts to find alternative supplies have been complicated by the pollution that rare earth mining and processing creates — a factor generally overlooked by China's producers.

China's suspension of much-needed exports of rare earths to Japan during a territorial dispute in 2010 fed a bubble in the market that drove prices up 30-fold by the summer of 2011.

But since then, prices have slumped by up to three-fifths for some of the rare earth elements, and the approaching completion of the world's largest refinery for rare earth metals in Kuantan, Malaysia, has contributed to the plunge. The plant, which has the capacity to meet a fifth of the world's demand, is awaiting a license to operate — a step that would help break China's near monopoly on rare earths, but also worsen an emerging glut of some of these strategic minerals.

The progress toward opening the plant has occurred despite street demonstrations over radiation concerns, regulatory challenges and the withdrawal of a major equipment supplier worried about the safety of the refinery, which is being built by Lynas, an Australian company.

Lynas has been trying for several years to find a site for the permanent disposal of the roughly 20,000 tons a year of low-level radioactive waste that will be produced, and is still struggling to do so.

The International Atomic Energy Agency recommended in June 2011 that a long-term disposal plan be approved by regulators before the refinery starts operations. Lynas says that it has met this goal with a plan that calls for storing up to 20 years of the refinery's production waste in pits lined with plastic and clay at the refinery, plus a commitment to find a site for a permanent repository and build it.

### Trade Issues With China Flare Anew

China is the world's dominant producer of rare earths, tungsten and molybdenum. It has imposed increasingly stringent export

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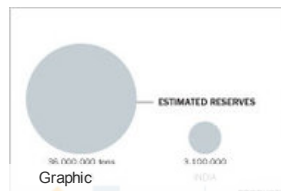


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taxes and quotas on them for the past two years, despite having promised the World Trade Organization when it joined in 2001 that it would remove export taxes and quotas on all goods except for a handful of other products.

In mid-March 2012, the United States, the European Union and Japan filed a formal "request for consultations" with China at the W.T.O. about restrictions on exports of rare earths and the minerals tungsten and molybdenum. Underscoring the diplomatic sensitivities of the case as well as the importance of trade in an election year, President Obama announced the move from the White House.

The request for consultations is the first step in a process that will lead to a full-fledged legal case in 60 days at the trade organization unless China unexpectedly agrees to the demands. The European Union has been trying without success for two years to persuade China to abandon its export taxes and export quotas on rare earths, said a European official.

In another sign of the economic and strategic importance of rare earths, the case represents the first time that Japan has started a formal trade case against China at the World Trade Organization since the creation of the agency in 1995. However, Japan has played a supporting role in a dozen cases filed by other countries against China.

The minerals trade case and the other trade issues are likely to meet Chinese resistance. This is particularly the case as senior officials in Beijing are jockeying for position ahead of a Communist Party conclave in fall 2012 that is expected to choose a slate of leaders for the country for the next five years or more.

Compounding the trade tensions is the prospect of revived frictions over China's currency policies. After rising fairly consistently against the dollar for nearly two years, helping quiet Western criticism that Beijing has kept the renminbi artificially low, the currency has begun to weaken again, making Chinese exports more competitive on the global market.

### Background

In 2010 the Energy Department warned that the United States was too reliant on China for the minerals, making clean energy industries in particular vulnerable to disruptions in supply. The report, which predicted that it could take 15 years to break American dependence on Chinese supplies, called for the nation to increase research and expand diplomatic contacts to find alternative sources, and to develop ways to recycle the minerals or replace them with other materials.

The group of rare earths is comprised of 17 elements: the so-called lanthanoids, from lanthanum through ytterbium, plus three more elements commonly found in ore with them — scandium, yttrium and lutetium.

Even with customs officials allowing containers of rare earths to leave China's docks, foreign buyers face a separate, serious problem. China has repeatedly reduced its export quotas for rare earths over the last five years so that they are now well below world demand.

World demand for Chinese rare earths approaches 50,000 tons a year, according to industry estimates.

The value of the remaining quotas soared to the point that the right to export a single ton of rare earths from China sold for about \$40,000, including special Chinese taxes.

That was a sizable additional cost for buyers of neodymium, a rare earth used to make lightweight, powerful magnets essential to everything from large wind turbines to gasoline-electric cars to iPhones. Neodymium currently sells for about \$40,000 a metric ton in China, and twice that much outside of the country because of the export restrictions, according to data from Metal Pages, a database service in London.

The cost of quotas had become exorbitant for users of lanthanum, which is vital for the catalytic converters that clean the tailpipe pollution of conventional, gasoline-powered cars. Lanthanum, mostly produced in Baotou in Inner Mongolia, sells for less than \$5,000 a ton in China and up to 10 times outside of China because of the export restrictions.

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### A Refinery Rises in Malaysia

A \$230 million refinery for rare earths being built by an Australian company could meet nearly a third of the world's demand and break China's lock on materials critical in many high-tech products.

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## Rare Earths Navigator

A list of resources from around the Web about rare earth minerals as selected by researchers and editors of The New York Times.

### [Critical Materials Strategy](#)

U.S. Department of Energy, Dec. 15, 2010

### [U.S. Geological Survey: Rare Earths](#)

[Rare Earths Magnetism Association](#)

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This has created a big incentive for companies to move factories to China, and many already have.

### **Mining and Innovation**

Large-scale mining of rare earths began in the 1950s, with most of the world's production coming from a mine at Mountain Pass, Calif., which is in a high desert region near the Nevada border. Much of the early demand came from the oil refining and glass manufacturing industries, which mainly use the lighter minerals like cerium and lanthanum. But as research continued, many new applications were found, including for the medium and heavy rare earths. Europium was used to make the color red when color television screens were developed. Various rare earths are now used for computer screens and energy-saving compact fluorescent bulbs.

But the biggest discoveries involved the powerful magnetic properties of rare earths. With the addition of neodymium, a medium rare earth, a conventional iron magnet could become up to 10 times as powerful per ounce, although the magnetic properties tend to degrade severely as the temperature approaches that of boiling water. Rare earth magnets began to be used in computer hard drives, mobile phones, large wind turbines and lightweight yet powerful drills and other power tools.

Adding trace amounts of a heavy rare earth like dysprosium turned out to preserve the magnetic qualities of neodymium magnets at somewhat higher temperatures, allowing them to be used in a wide range of automotive applications, from lightweight power steering motors under the hood to the powerful motors that help turn the wheels in electric cars and hybrid gasoline-electric cars. Using a different rare earth, samarium instead of neodymium in a rare earth magnet reduces the magnetic force somewhat but allows them to be used at extremely high temperatures, and this has made samarium-based rare earth magnets critical to military applications like the tiny motors that control the fins on missiles and smart bombs.

### **China's Rise**

China rapidly expanded production through the 1980s and 1990s, hiring American advisers and sharply undercutting higher-cost producers elsewhere, including the Mountain Pass mine, which closed in 2002. Manufacturers that need rare earths moved to China from all over the world to be closer to their sources of supply, including from the United States, although Japan remained an important importer of raw rare earths for its factories.

Chinese state-owned companies tried repeatedly but unsuccessfully to acquire the Mountain Pass mine, which was owned by Unocal, then Chevron and now MolyCorp, a company that did an initial public offering in 2010 on the New York Stock Exchange.

An ore processing operation at Mountain Pass is now reprocessing previously mined tailings to extract neodymium from them, and plans are under way to reopen the mine, which has mainly light rare earths but also some medium and heavy rare earths. Congress held hearings in 2010 on possible legislation to provide research money and loan guarantees for rare earth mining and manufacturing.

The Lynas Corporation in Australia is in the final stages of preparations of opening the Mount Weld mine. The Australian government blocked an effort by a Chinese government-owned company in 2009 to buy 52 percent of the company, on security grounds. Efforts are also underway to develop mines in Canada, South Africa, Vietnam, Kazakhstan and Mongolia, although digging a mine and equipping the nearby ore processing mill can take three to five years, and longer if there are difficulties in obtaining permits.

### **Environmental Concerns**

The Chinese government has said with increasing frequency that it wants to limit exports of raw rare earths so as to protect the environment, conserve its own reserves and encourage the development of manufacturing within China. The Ministry of Industry and Information Technology circulated a draft plan in 2009 to ban the export of five rare earths, including dysprosium,

but the Chinese government later retreated from this idea under international pressure.

The mining of heavy rare earths has been largely unregulated until very recently and caused considerable environmental damage, with organized crime syndicates playing a prominent role in operations that dump acid into local waterways and cause other pollution. The Chinese government has taken a series of steps in 2010 to try to limit production, close illegal mines and consolidate the industry under the control of state-owned enterprises.

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### China, a Rare Earths Giant, Set to Start Importing the Elements

By REUTERS

Efforts to expand the industrial chain mean that China, which produces more than 90 percent of the world's rare earths, is now consuming 65 percent of global output, up from 25 percent a decade ago.

July 12, 2012, Thursday

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### U.S., Europe and Japan Escalate Rare-Earth Dispute With China

By PAUL GEITNER

The three countries asked for a dispute settlement panel to be formed after failing to resolve their complaints through the World Trade Commission.

June 28, 2012, Thursday

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### China, Conceding Errors, Vows to Overhaul Rare Earth Metals Industry

By KEITH BRADSHER

Chinese officials denied that the newly issued white paper had been issued as part of its defense against charges filed by other nations at the World Trade Organization.

June 21, 2012, Thursday

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### Green Movement Takes Root in Malaysia

By LIZ GOOCH

A rare earth metals refinery outside a coastal town has provoked an unprecedented outcry by environmental activists that has encouraged residents elsewhere to rally against similar projects.

June 19, 2012, Tuesday

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### Environmental Protest Becomes Rallying Point in Malaysia

By LIZ GOOCH

Environmental groups in Malaysia are hoping to use a popular protest against an Australian-built refinery to raise awareness of projects in other parts of the country.

June 19, 2012, Tuesday

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### A Push to Make Motors With Fewer Rare Earths

By JIM WITKIN

With China controlling more than 90 percent of the world's production of rare earth metals, the automobile industry is searching for alternative materials.

April 22, 2012, Sunday

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## **Builder of Rare Earth Plant in Malaysia Counters Complaints**

By LIZ GOOCH and KEITH BRADSHER

Lynas, an Australian company, said it had carried out testing to ensure that the waste from refining, including radioactive material, would be well within safe levels.

April 20, 2012, Friday

MORE ON RARE EARTHS AND: LYNAS CORP LTD, REFINERIES, ENVIRONMENT, RARE EARTHS, AUSTRALIA, MALAYSIA

## **Challenges to a Rare Earth Refinery in Malaysia**

By LIZ GOOCH and KEITH BRADSHER

The facility, outside a large city, has become a lightning rod for activists and residents concerned about possible radiation. Government leaders are wary that it could become an election issue.

March 21, 2012, Wednesday

MORE ON RARE EARTHS AND: LYNAS CORP LTD, INTERNATIONAL TRADE AND WORLD MARKET, POLITICS AND GOVERNMENT, RADIATION, RARE EARTHS, MALAYSIA



## **Obama Takes Up Trade Case Against China**

By MARK LANDLER

President Obama said the United States was taking the first step toward filing a legal case against the Chinese government over its reported hoarding of rare earth metals.

March 13, 2012, Tuesday

MORE ON RARE EARTHS AND: EUROPEAN UNION, WORLD TRADE ORGANIZATION, INTERNATIONAL TRADE AND WORLD MARKET, RARE EARTHS, CHINA



## **Rare Earth Trade Case Against China May Be Too Late**

By KEITH BRADSHER

Even if the United States wins a trade case against China, by the time policies are changed, more Western and Japanese factories will have moved there.

March 13, 2012, Tuesday

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## **Trade Tensions With China Are Flaring Again**

By KEITH BRADSHER

On Tuesday, the United States, the European Union and Japan filed a case against China over its restrictions on exports of rare earth metals.

March 12, 2012, Monday

MORE ON RARE EARTHS AND: INTERNATIONAL TRADE AND WORLD MARKET, RARE EARTHS, UNITED STATES, CHINA



## **Merger Combines a Rare Earth Mining Firm With a Processor**

By KEITH BRADSHER

Molycorp, a mine operator, acquires Neo Material for \$1.3 billion, in the latest deal in a consolidating industry.

March 08, 2012, Thursday

MORE ON RARE EARTHS AND: MOLYCORP INC, INTERNATIONAL TRADE AND WORLD MARKET, MINES AND MINING, MERGERS, ACQUISITIONS AND DIVESTITURES, RARE EARTHS, JAPAN, CHINA

## **Germany and Kazakhstan Sign Rare Earths Agreement**

By MELISSA EDDY

The accord, valued at around \$4 billion, guarantees German companies access to critical minerals in exchange for technological and other investments.

February 09, 2012, Thursday

MORE ON RARE EARTHS AND: MINES AND MINING, RARE EARTHS, KAZAKHSTAN, GERMANY

## **Rare Earth Plant Cleared To Operate in Malaysia**

By KEITH BRADSHER

Malaysian regulators granted an operating license for a giant rare earth metals refinery that has been at the center of a dispute over radioactive waste management.

February 02, 2012, Thursday

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## Rare Earth Metal Refinery Nears Approval in Malaysia

By KEITH BRADSHER

The opening of a plant in Malaysia appears likely soon, even after street demonstrations over radiation worries, regulatory challenges and the withdrawal of a supplier worried about safety.



February 01, 2012, Wednesday

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July 11, 2012

# China, a Rare Earths Giant, Set to Start Importing the Elements

By REUTERS

BEIJING — China, the world's biggest producer of [rare earth](#) metals, is expected to become an importer of some of the materials as early as 2014 as it continues to develop its high-technology industries.

For more than two years, China has been trying to curb exports of rare earths, in part to redress environmental damage from decades of mining, and last year it effectively shut down its rare earth industry for three months. The country has also made it clear that it would prefer to be the biggest consumer of rare earth metals rather than the biggest producer.

Today, appetite for rare earths — a group of chemical elements that are crucial for new technologies as varied as smartphones, hybrid cars, missiles and [wind turbines](#) — is growing fast in China. Efforts to expand the industrial chain mean that China, which produces more than 90 percent of the world's rare earths, is now consuming 65 percent of global output, up from 25 percent a decade ago.

“By 2014 or 2015, China will probably be in a net import situation for certain rare earths,” said Mark Smith, chief executive of Molycorp Minerals, a Colorado mining company that recently acquired Neo Material Technologies of China to bolster its processing expertise and its presence in that country.

“When the demand is there, that's where the supply has to go,” Mr. Smith said.

While tight export controls in China have led to trade disputes with the United States, Japan and Europe, Beijing's priorities extend beyond control of the supply and prices of rare earth elements. China also hopes to dominate products like magnets, which can be made smaller and more powerful with rare earths.

Recent changes in the Chinese approach to coke — or [coal](#) from which most of the gases have been removed by heating, a crucial ingredient in steel making — offer lessons for rare earths, analysts say.

In a bid to supply coke to its own steel mills rather than shipping most of the material abroad, China increased export taxes, rode out trade disputes and by 2008 turned from being the world's

biggest exporter of coke into one of the world's biggest importers. Today, China imports one-fifth of its annual consumption of coke, which is more than half a billion tons.

The U.S. Geological Survey estimates that China holds about half of the world's reserves of rare earths, with 55 million tons, compared with 19 million tons in Russia and 13 million tons in the United States. China, meanwhile, says that its reserves represent only a quarter of global reserves, and that churning out 90 percent of world production is unsustainable.

Chinese consumption of rare earths will grow at least 10 percent a year in the next few years, estimates Li Zhong, vice president of China's biggest mining company for the metals, Inner Mongolia Baotou Steel Rare-Earth Hi-Tech. The caps on output imposed by Beijing mean that such growth in demand can be met only if China cuts exports or increases imports, he added.

Countries including Canada, India and the United States have responded to the Chinese export curb by resuming their own production of rare earths after having shuttered mines decades ago. Processing is also drawing increasing interest, with Lynas of Australia seeking approval to build a plant in Malaysia, for example.

"The control over global rare earth output is important as far as it buys China the time needed to establish the supply chain," said Jane Nakano, an energy and national security fellow at the Center for Strategic and International Studies in Washington.

One crucial industry is magnets, which are used in renewable energy, satellites, medical equipment and natural gas drilling. Chinese producers like Zhenghai Magnetic Materials contribute more than 80 percent of global output, up from close to zero two decades ago.

"That is growing just tremendously every year," Mr. Smith of Molycorp Minerals said.

China also makes more than 70 percent of the world's luminescent materials, hydrogen storage cells and glass polishing materials, the Ministry of Industry said in a report last month. All of those items require rare earth elements.

While the ministry said China was still behind in technologies that refine or make use of the minerals, export curbs are playing a role in its effort to catch up and have encouraged foreign companies to bring technology to China as they seek less expensive sources for the rare earths they need.

"We were supplying all the glass plants, and they were a huge operation in the United States for over 100 years," said Michael Silver, chief executive of American Elements, an advanced materials maker that gets rare earths from China. "But those operations have essentially all moved to China."

Glass makers were lured to China because of the rare earth metal cerium, which is used in glass coloring and polishing.



Another element, neodymium, is used in energy-saving light bulbs, whose production has also increasingly shifted to China.

While China is unlikely to import light rare earths like lanthanum and cerium, which are abundant in Inner Mongolia, an autonomous region of China, shortages of heavy and medium rare earths could arise.

Mr. Smith of Molycorp, which plans to reopen and expand a giant rare earth mine in California, hopes that in the future his company will not only fill gaps in the global supply but will also sell the elements to China.

“We don’t think China can keep up with the demand for rare earths,” he said. “They are going to have to go to the outside.”

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**The New York Times**

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June 27, 2012

## **U.S., Europe and Japan Escalate Rare-Earth Dispute With China**

By [PAUL GEITNER](#)

BRUSSELS — The [European Union](#), the United States and Japan ramped up their dispute with China over its restrictions on exports of [rare earths](#) Wednesday after failing to resolve the case through negotiations at the [World Trade Organization](#).

The European trade commissioner, Karel De Gucht said that the European Union and its partners in the case had asked for a dispute settlement panel to be formed in the wake of inconclusive consultations with China, which were held after the complaint was filed last March.

Mr. De Gucht noted that in January, an appeals tribunal at the W.T.O. upheld a ruling from last year in a related case, in which China was told to dismantle export duties and quotas on nine other industrial raw materials, including bauxite.

The current complaint involves restrictions on rare earths, tungsten and molybdenum, which were imposed by China in 2006 and tightened since then.

“Despite the very clear W.T.O. ruling earlier this year in the first raw materials case, Beijing has not taken steps to remove these export restrictions,” Mr. De Gucht said in a [statement](#). “We regret that we are left with no other choice but to solve this through litigation.”

China currently produces more than 90 percent of the world’s rare earth metals, which are essential to high-technology products from smartphones to [electric car](#) motors. The W.T.O. case argues that Beijing is violating free trade rules by putting pressure on companies to move factories to China if they want access to Chinese raw materials.

Chinese officials have previously signaled that their defense in that case will be to use a provision of W.T.O. rules that allows export restrictions for environmental protection and the conservation of scarce natural resources.

In what may have been an effort to buttress that argument, China’s cabinet last week issued its first white paper on rare earth industry policies, saying that poorly regulated mining of rare earth metals had caused widespread environmental damage and promising an extensive cleanup and a crackdown on illegal mines.

The W.T.O. dispute settlement panel, once established, has six months to deliver its report to the parties, who then can later file an appeal.

*Keith Bradsher contributed reporting from Hong Kong.*

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June 20, 2012

## **China, Citing Errors, Vows to Overhaul Rare Earth Industry**

By [KEITH BRADSHER](#)

HONG KONG — China’s cabinet issued on Wednesday its first white paper on [rare earth](#) industry policies, acknowledging that poorly regulated mining of rare earth metals had caused widespread environmental damage and promising an extensive cleanup and a crackdown on illegal mines.

The document warned that inefficient mining and refining practices had squandered scarce mineral reserves and produced extensive emissions of radioactive residues, heavy metals and other contaminants.

“Excessive rare earth mining has resulted in landslides, clogged rivers, environmental pollution emergencies and even major accidents and disasters, causing great damage to people’s safety and health and the ecological environment,” the white paper said.

China produces more than 90 percent of the world’s rare earth metals, which are essential to high-technology applications from smartphones to smart bombs and are also used in oil refining, glass polishing, batteries, [electric car](#) motors and many other industrial applications.

The document comes after the United States, the European Union and Japan jointly filed a case in March at the [World Trade Organization](#) that challenged China’s restrictions on rare earth exports, which were imposed in 2006 and have been repeatedly tightened since then. The W.T.O. case argues that the export quotas and tariffs violate free trade rules by putting pressure on companies to move their factories to China if they want to tap China’s vast supply of rare earths.

Chinese officials have previously signaled that their defense in that case will be to use a provision of W.T.O. rules that allows export restrictions for environmental protection and the conservation of scarce natural resources. But they were quick to deny Wednesday that this had been their motive for releasing the white paper.

“The protection of the environment is never a pretext for gaining advantage or increasing economic returns,” Su Bo, a deputy minister of industry, said at a news conference in Beijing.

The white paper says China has only 23 percent of the world’s rare earth reserves and has already depleted the most accessible reserves. But the United States Geological Survey a year ago raised its estimate of Chinese rare earth reserves, to half the world’s supply, compared with a third of the world’s reserves.

Various local and provincial governments across China have announced numerous discoveries of large rare earth deposits in recent years, yet Chinese officials have scarcely changed official estimates for nationwide reserves, rare earth industry experts point out.

The Chinese government has already been quietly closing rare earth refineries for months at a time in the last year and forcing them to install costly environmental controls. Together with a plunge in world prices for rare earths in the last year as a speculative surge has subsided, the environmental rules have hurt profit margins for exporters.

Dudley Kingsnorth, an adjunct professor specializing in rare earths at Curtin University in Perth, Australia, said that the white paper, “is really only a more formal statement of their current actions to place more effective control on the industry to reduce the impact on the environment while ensuring they receive a better return on their rich endowment of rare earths.”

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June 19, 2012

# Green Movement Takes Root in Malaysia

By LIZ GOOCH

KUALA LUMPUR — When a planned 24-hour environmental protest gets under way this Saturday on the outskirts of the coastal Malaysian town of Kuantan, the roll call will include speakers from across the country.

While the catalyst for the rally is the construction of a [rare earth](#) refinery nearby — the target of a sustained campaign by local residents and environmental groups — the crowd is also expected to hear from people from other parts of Malaysia who are concerned about projects near their homes that they fear could be damaging the environment.

Among them will be residents of a fishing village near an oil and gas plant in the southern state of Johor; people from Perak State who are worried about the potential effects of an iron ore refinery on a mangrove forest; and villagers from Pahang State who are concerned about possible pollution from a gold mine, according to Wong Tack, chairman of the group behind the protest, Himpunan Hijau, which means “Green Assembly” in Malay.

Himpunan Hijau is hoping to draw attention to these projects by taking advantage of the momentum of the campaign against the rare earth refinery being built by the Australian mining company Lynas, which has prompted thousands to join protests and invigorated the country’s environmental movement.

Malaysia, a nation rich in biodiversity, has often attracted the wrath of environmental groups concerned about issues like illegal logging and the loss of habitat for the endangered orangutan.

While some local groups have been active for decades, many of the fiercest campaigns have come from foreign organizations, and analysts say few projects or industries have galvanized homegrown environmentalists the way the Lynas refinery near Kuantan appears to have done.

“The kind of protests, the kind of activism that we see for the Lynas plant is something unprecedented,” said Khoo Kay Peng, a management consultant and policy analyst.

Others say the rising level of awareness in Malaysia may mean that companies engaged in industries or activities deemed potentially hazardous to the environment are likely to face greater oversight. “Foreign businesses involved in projects that could damage the environment — such as mining, logging or exploration — are liable to encounter scrutiny from local environmental groups and government sources,” said Maria Patrikainen, a Southeast Asia analyst at the consulting institution IHS. She added that the government was likely to become increasingly sensitive to the concerns of environmental groups, particularly before elections that are widely expected to be held later this year.

The campaign against the rare earth plant began in earnest in March 2011, when some Kuantan residents established a group, Save Malaysia Stop Lynas, to voice their concerns that the plant could produce harmful radiation, a claim vigorously denied by Lynas.

Environmental organizations swiftly rallied around the residents' group, helping to organize protests, send petitions to the government and issue statements in support, said Tan Bun Teet, chairman of Save Malaysia Stop Lynas.

Himpunan Hijau provides an example of how this movement has grown. The group was formed last September, initially to help organize the campaign against the rare earth refinery, but it is now also helping residents in other states lobby against projects they consider a threat to the environment. Among them are people on the island of Penang who are concerned about housing developments encroaching on coastal areas and hillsides.

“We garner the people’s power,” said Mr. Wong, the chairman, describing the group as a “grass-roots people’s movement.”

Rare earth metals are found in nature with radioactive contaminants that must be separated and disposed of during refining.

Lynas says that the waste produced in this process will be well within levels considered safe and that the plant has been subject to “a thorough and lengthy regulatory review” to ensure that it meets the highest international safety standards.

On Tuesday, a parliamentary committee appeared to agree with the company, releasing a report concluding that a license should be issued to Lynas because it had fulfilled legal provisions and standards more stringent than international standards and that it had provided the necessary systems to ensure public health, safety and environmental protection.

The panel’s report made 31 recommendations, among them that Lynas and the Atomic Energy Licensing Board continuously monitor radiation levels, which it noted would be “low and safe.”

Lynas said the findings of the parliamentary panel were “yet another affirmation of the science” behind its plant and its safety features, according to a report by The Associated Press.

“We look forward to the issuance of the temporary operating license so we can demonstrate that safety to the Malaysian community,” the company said in a statement to the news agency.

The parliamentary report followed a government decision Friday to reject an appeal by activists against awarding a temporary operating license to Lynas. Maximus Ongkili, the minister of science, technology and innovation, ruled that there was “no strong justification nor scientific or technical basis” to set aside the decision to grant Lynas the license, according to a statement released by the ministry.

Save Malaysia Stop Lynas said it would appeal the minister’s decision.

In a separate development that could complicate the debate in Malaysia, the Chinese government scheduled a news conference in Beijing on Wednesday to unveil its new plan for the country's rare earth industry, including an extensive cleanup of environmental damage already done.

The new Lynas plant, estimated to cost 2.5 billion ringgit, or nearly \$800 million, is expected to weaken China's dominance of the production of rare earths, which are used in a range of high-technology products including smartphones, [electric cars](#) and military equipment.

Lynas has started defamation proceedings against Save Malaysia Stop Lynas, and said in a statement released after a demonstration in April that while it respected the right of people to engage in peaceful protest, it did not accept that such a right extended to "a serious campaign of misinformation which creates unnecessary anxiety and fear in the community."

Analysts say that the issue has become highly politicized, with the opposition, which refused to take part in the parliamentary panel, playing a leading role in the campaign against the plant. Environmentalists also point out that part of the reason why the Lynas plant has provoked such a divisive response is that Malaysians' experience of rare earth projects has been shaped by another refinery near Bukit Merah, owned by Mitsubishi Chemical.

Local residents there have blamed the plant, which the company closed in 1992, for birth defects and a number of leukemia cases.

The Malaysian government already requires companies to submit environmental impact assessments before projects are approved.

Deputy Prime Minister Muhyiddin Yassin emphasized recently that the government had introduced laws and policies to conserve the environment and maintain biodiversity.

"We have also required states in the country which have jurisdiction over land and flora and fauna to undertake housing and industrial development without harming the environment," he was quoted as saying by Bernama, the national news agency.

Environmental groups say, however, that environmental damage is still occurring, with deforestation one of their chief concerns, particularly in the state of Sarawak on the island of Borneo.

A study released last year by Wetlands International, a nongovernment organization based in the Netherlands, found that between 2005 and 2010, almost 10 percent of forests and 33 percent of peat swamp forests in Sarawak had been cleared, mainly for palm oil plantations.

Whether the energy surrounding the Lynas campaign can give lasting momentum to environmental groups remains to be seen. "I think the biggest lesson is to make environmental issues relevant to people," said Mohamed Shah Redza Hussein, executive director of the Malaysian Nature Society.

Raymond Alfred, head of conservation and research at the Borneo Conservation Trust, would like to see conservation issues receive the type of attention that has been lavished on the Lynas plant. He said about 60 percent of the trust's funding came from Japan and that it was challenging to raise money locally.

A stronger environmental movement is the dream of people like Yasmin Ras-yid, the director of EcoKnights, a nongovernment organization she established seven years ago to help educate the public about the environment.

She said Malaysia's environmental movement had traditionally been weaker than those in other Asian countries, like India and Indonesia, but that awareness was now at "an all-time high."

While environmental protests like those against logging typically attract the "few usual suspects," according to Ms. Rasyid, the turnout for the anti-Lynas demonstrations has included participants from a much wider spectrum of society.

"There's dynamism right now," she said.

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April 20, 2012

## A Push to Make Motors With Fewer Rare Earths

By JIM WITKIN

FOR much of the last century, the straightforward solution to making a car perform better has been to install a bigger engine. In the hybrids and [electric cars](#) of coming years, however, the answer might be installing motors with more powerful magnets.

Until the 1980s, the most powerful magnets available were those made from an alloy containing samarium and cobalt. But mining and processing those metals presented challenges: samarium, one of 17 so-called [rare earth](#) elements, was costly to refine, and most cobalt came from mines in unstable regions of Africa.

In 1982, when researchers at General Motors developed a magnet based on neodymium, it seemed that an ideal alternative had arrived. While neodymium is also one of the rare earth metals — a misleading name, as they are actually fairly common, just widely dispersed — it is more abundant than samarium, and at the time it was cheaper. When combined with iron and boron, both readily available elements, it produced mighty magnets.

In the electric drive motor of a hybrid car, for instance, just a kilogram, or 2.2 pounds, of neodymium-based magnets can deliver 80 horsepower, enough to move a 3,000-pound vehicle like the [Toyota Prius](#). Neodymium is an ideal magnet material because it helps to retain a magnetic charge during all driving conditions, and when dysprosium is added to the alloy, performance at high temperatures is preserved.

In recent decades, the demand for neodymium has increased sharply, a result of its usefulness in producing the compact, lightweight magnets used in devices like computer hard drives and audio system speakers.

Today, China controls more than 90 percent of the world's production of rare earth metals and tightly regulates their export. In 2010, China suspended exports of rare earths to Japan over a territorial dispute. The ruckus caused neodymium prices to soar to nearly \$500 a kilogram by the summer of 2011, from less than \$50 a kilogram at the start of 2010.

Though shipments have resumed and prices have since come down, the supply uncertainties have again prompted a search for alternatives. Companies like Molycorp, which is reopening and expanding its rare-earth mine in Mountain Pass, Calif., about 55 miles south of Las Vegas, are seeking new sources for these metals.

New supplies are not the only searches under way: last week Honda announced that it would start recycling rare earth metals from used car parts like the nickel-metal-hydride batteries used in hybrid cars, which contain small amounts of neodymium along with lanthanum and cerium. In 2011, Toyota said it was developing induction motors that do not require rare-earth magnets.

Nonetheless, said Mark Johnson, an Energy Department scientist, demand for neodymium will continue to outstrip supply, even with recycling programs and new sources, like Malaysian mines, emerging.

In its "Critical Materials Strategy" report, released at the end of 2011, the Energy Department identified five rare earth metals — neodymium and dysprosium among them — as vital for national security and for the nation's clean energy industries.

To address the supply shortfall, the Energy Department's advanced research agency, ARPA-E, last fall introduced the Rare Earth Alternatives in Critical Technologies program. Starting in January, the program, directed by Dr. Johnson, began distributing \$22 million in grants to 14 promising research projects.

While permanent-magnet motors are the most popular type used in electric and hybrid drive systems — an estimated 90 percent of today's electric vehicles use this design, said Kevin Riddell, an analyst with LMC Automotive — they are not the only workable design. Induction motors, for example, draw an electrical current to create the magnetic field that makes the motor's shaft rotate. Permanent magnet motors, on the other hand, rely on an existing field surrounding its magnets.



“For the same amount of power output, compared to an induction motor, the permanent magnet motor is always going to be smaller, lighter and more compact,” said John Miller, a power electronics researcher at Oak Ridge National Laboratory in Tennessee.

“Because they create a magnetic field without drawing current, a permanent magnet motor will use the vehicle’s battery more efficiently over a wide range of speeds,” Dr. Miller said. Conserving battery power is important for extending the car’s driving range, he added.

The goal of the ARPA-E program is to retain the advantages of permanent-magnet motors while using little or no critical rare earths, Dr. Johnson said. “But any new approach must not sacrifice power output and efficiency or increase cost.”

Researchers from the Energy Department’s Ames Laboratory, in Ames, Iowa, are working with cerium as a possible substitute for neodymium. While cerium is also a rare earth, it is four times more abundant than neodymium. Estimates from Molycorp suggest cerium will make up half of the rare earth content of the Mountain Pass mine.

But working with cerium has its challenges, said Bill McCallum, a senior scientist at the Ames Lab. Cerium forms a lattice structure with iron or cobalt that gives up its magnetic properties more easily, especially under high temperature conditions.

“There’s a number of ways to attack this, and we’re trying all of them,” Dr. McCallum said.

Even with these efforts, he said he expected that a cerium magnet would never match the strength of today’s neodymium magnets. “If you expect to achieve the same power and efficiency,” he said, “you’ll need a different motor design to work with a lesser-quality magnet.”

For this reason, many of the ARPA-E projects are teaming magnet makers with motor makers. QM Power, based in Lee’s Summit, Mo., has designed a motor using what it calls Parallel Path Magnetic Technology.

“Changing the orientation of the magnets allows us to couple the power from multiple magnets and create stronger magnetic fields inside the motor,” said Patrick J. Piper, chief executive of QM. “This means we can use lower-strength magnets to achieve the same power output as rare-earth magnets.”

As most of these are early stage efforts, the research projects will not see commercial use anytime soon, Dr. Johnson, of the Energy Department, acknowledged. “The projects are three years long, and then the successful ones would need to go through market testing,” he said.

Dr. Johnson said that the search for alternatives will continue to gain momentum, driven partly by the scarcity of certain metals, but also by the desire to create more efficient and lower-cost motor designs.

Eric Ridenour, chief executive of UQM, a Colorado-based motor maker, said new sources for the metals, like the Mountain Pass mine, would help relieve price pressures to a point. But Mr.

Ridenour, formerly the chief operating officer of the Chrysler Group, also sees value in developing new solutions.

“Developing viable alternatives will put competition back in the magnet market and should put some rationality back into pricing and supply,” he said.

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December 15, 2010

## U.S. Called Vulnerable to Rare Earth Shortages

By [KEITH BRADSHER](#)

HONG KONG — The United States is too reliant on China for minerals crucial to new clean energy technologies, making the American economy vulnerable to shortages of materials needed for a range of green products — from [compact fluorescent light bulbs](#) to [electric cars](#) to giant [wind turbines](#).

So warns a [detailed report](#) to be released on Wednesday morning by the [United States Energy Department](#). The report, which predicts that it could take 15 years to break American dependence on Chinese supplies, calls for the nation to increase research and expand diplomatic contacts to find alternative sources, and to develop ways to recycle the minerals or replace them with other materials.

At least 96 percent of the most crucial types of the so-called [rare earth](#) minerals are now produced in China, and Beijing has wielded various export controls to limit the minerals' supply to other countries while favoring its own manufacturers that use them.

“The availability of a number of these materials is at risk due to their location, vulnerability to supply disruptions and lack of suitable substitutes,” the report says, which also mentions some concerns about a few other minerals imported from elsewhere, such as cobalt from the Congo.

The Energy Department report is being released the same morning that cabinet officials from China and the United States will meet in Washington to discuss economic and commercial issues.

While no detailed agenda has been released, the talks are expected to include American objections to China's tightening restrictions on rare earth exports — like a two-month halt this autumn on shipments to Japan, and a shorter-lived slowdown of exports to the United States and Europe.

And on Tuesday, China's finance ministry announced on its Web site, and the official Xinhua news agency later reported as well, that China plans to increase its export taxes on some rare earths next year. The ministry did not say how much the taxes would increase. Although [World Trade Organization](#) rules ban export taxes, China has imposed them on rare earths for the last four years.

David Sandalow, the assistant secretary of energy for policy and international affairs, who oversaw preparation of the Energy Department report, said in a telephone interview that the timing of the report's release and the American-China cabinet meetings was coincidental.

But the report reflects an emerging view within the American government that domestic sources of rare earths are needed, in addition to suppliers in many other countries, to ensure the viability of clean energy manufacturing in the United States.

"We can build a new industry and put our clean energy future on a sound footing, creating many new jobs in the process," Mr. Sandalow said.

Still, the report presents a fairly gloomy assessment of the United States' ability to wean itself from Chinese imports. For as long as the next 15 years, the supplies of at least five minerals that come almost exclusively from China will remain as vulnerable to disruption as they are absolutely vital to the manufacture of small yet powerful electric motors, energy-efficient compact fluorescent bulbs and other clean energy technologies, the report said.

The five minerals are medium and heavy rare earth elements of which China mines an estimated 96 percent to 99.8 percent of the world's supply: dysprosium, terbium, neodymium, europium and yttrium.

China also increasingly dominates the manufacture of clean energy technologies that require such minerals, including the production of million-dollar wind turbines. Chinese export restrictions have added up to \$40 a pound to world prices, which makes a big difference particularly for some of the less expensive rare earths, like lanthanum, that sell for several dollars a pound in China.

That is among the reasons, along with cheap labor and extensive Chinese government subsidies, that many clean energy manufacturers have found it cheaper to shift production to China.

Mr. Sandalow said that wind turbine manufacturers were capable of building very large turbines without rare earths. But using rare earths could reduce the per megawatt cost of wind energy and improve its competitiveness through savings on other materials, like steel and copper.

He cautioned that the United States had been putting far fewer resources than China into exploring ways to use the powerful magnetic and other properties of rare earths.

"There are thousands of rare earth researchers in China and dozens in the United States, and that underscores both the challenge and the opportunity," he said. "Their expertise in this area is significant."

China's finance ministry, in announcing plans to raise export taxes on some rare earths, did not indicate which minerals might be affected.

Since 2006, China has imposed an export tax of 15 percent on light rare earths like lanthanum and cerium, which are needed for oil refining and glass manufacturing, and 25 percent on heavy rare earths like dysprosium and terbium.

China mines about 92 percent of the world's light rare earths.

Dysprosium, which helps rare earth magnets preserve their magnetism at high temperatures, is [mined almost exclusively](#) in southern China and sells for \$95 a pound in China and \$135 a pound outside, including the export tax.

Dysprosium has emerged as the mineral most vital to clean energy industries yet most vulnerable to supply disruptions, the report said.

Dudley Kingsnorth, a prominent rare earth mining consultant in Perth, Australia, said he agreed that a dysprosium shortage was likely. He added that he expected that a rare earth shortage would slow the overall adoption of new rare earth technologies by clean energy industries for at least the next five years.

American and Japanese officials have said that they might file a legal challenge at the World Trade Organization to China's taxes on rare earth exports, as well as on quotas that China imposes on rare earth exports.

Until this autumn, Chinese officials had portrayed their rare earth policies as an effort to force high-tech companies to move their factories to China and retain supplies for domestic industries. The Chinese government has recently shifted to describing the export restrictions as an environmental measure, noting that extracting and processing the minerals can be a highly toxic process that has also resulted in leaks of radioactive mining waste into the groundwater in northern China.

But while W.T.O. rules allow export restrictions for environmental reasons, that is only if a country also restricts domestic consumption, which China has not done.

Demand for rare earths and China's virtual chokehold on supplies have prompted some overseas companies to enter, or re-enter, the field.

Molycorp, an American company that in August made an initial public offering of its shares on the [New York Stock Exchange](#), plans to open in 2012 a large rare earth mine at Mountain Pass, Calif., that closed in 2002 after prices were undercut by Chinese competitors. Molycorp announced on Monday that it had received the last of the construction permits needed to proceed.

The Lynas Corporation of Australia plans to open at the end of next year a large rare earths mine at Mount Weld, Australia.

But both the Molycorp and Lynas mines will produce mostly light rare earths and relatively little of the medium and heavy rare earths needed for magnets and other significant clean energy applications.

Dozens of small mining companies hope to open new mines in the United States and elsewhere that could tap reserves of medium and heavy rare earths. But these small companies face formidable legal, financial, marketing and management obstacles, the Energy Department report said.

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April 19, 2012

## **Builder of Rare Earth Plant in Malaysia Counters Complaints**

By LIZ GOOCH and [KEITH BRADSHER](#)

KUANTAN, MALAYSIA — The Australian company building a rare earth refinery in Malaysia sought to counter critics who are concerned that the plant could pose radioactive hazards, laying out detailed responses on Thursday that it said refuted the many “false allegations” made about the plant.

The company, Lynas, said the first phase of its project would be ready to open in two weeks. But it is unclear when the plant will begin operations, as the Malaysian government has withheld the company’s temporary operating license while it hears appeals from people opposed to the facility.

The plant, which has been plagued by delays and protests by residents worried about possible health and environmental risks, is designed to help break China’s stranglehold on the production of rare earths. Another project is under construction in the California desert near Death Valley.

China mines and processes more than 90 percent of the world’s current supply of rare earths, minerals that are used for a wide range of high-technology products, including smartphones, smart bombs and [electric cars](#). They are found in nature with radioactive contaminants that must be separated and disposed of during refining.

Lynas says its ore, mined in the Australian desert, has a lower concentration of these contaminants than many rare earth deposits elsewhere.

On Thursday, journalists were given a rare glimpse inside the plant, and Mashal Ahmad, managing director of Lynas Malaysia, offered a detailed presentation intended to answer more than 20 allegations, many relating to the safety of the plant and the radiation expected to be produced.

Mr. Mashal said the company had carried out testing to ensure that the plant met international safety standards and that the waste produced in the refining process would be well within the levels considered safe. He said an air monitoring system had been installed on the site and that the results would be available online. “We have nothing to hide,” he repeatedly said.

Responding to critics who have asked why Lynas was not building the plant in Australia, Mr. Mashal said the company had received a license to build a plant in Perth but had decided to come to Malaysia for economic reasons.

The company had planned to complete the plant by last September, but it was confounded by construction delays.

A person familiar with the project, who requested anonymity because of the controversy associated with it, said Wednesday that electrical wiring at the project had still not been completed.

Part of the problem is that some components were ordered late and could not be manufactured quickly, the person said, although Lynas has denied that. It would be very difficult, although not impossible, to run the refinery while continuing to install further wiring.

The plant has received a temporary operating license from the Malaysian Atomic Energy Licensing Board, but activists are calling for the license to be revoked. Maximus Ongkili, the science, technology and innovation minister, heard an appeal Tuesday by applicants who want the government to withdraw the company’s permit.

In a statement released after the meeting, the ministry said Mr. Ongkili would study the documents submitted and weigh the applicants’ arguments. “He will also consult related experts and authorities before making a decision on the appeal as soon as possible,” the statement read.

The Kuala Lumpur High Court had previously dismissed an application by 10 residents seeking judicial review of the temporary license. The judge ruled that it would be premature for them to do so when they could still appeal to the minister.

Mr. Mashal, the Lynas Malaysia managing director, said he had not received any indication from the government when a decision would be made on the license. He said further delays would have a “serious commercial impact” on Lynas, its suppliers and its customers.

He added: “I have every confidence the country, the government, the people, the authorities will respect the rule that has been established, the rules that make us want to come and invest in this country.”

The plant has also encountered strong resistance from the Malaysian political opposition, which announced last month that it would boycott a parliamentary committee set up by the government to investigate public concerns about the safety of the project.

Critics have derided the committee, which was intended to be bipartisan, as an attempt to “whitewash” concerns about the plant before elections that are widely expected to be held in June.

Tan Bun Teet, who is involved in the appeal to the minister and is the chairman of the lobbying group Save Malaysia Stop Lynas, said the government should withdraw the company’s license. “We will take court action if the minister does not revoke the license,” he said.

In February, activists held demonstrations in several Malaysian cities, including Kuantan and Kuala Lumpur. They are planning another protest in the capital April 28.

*Keith Bradsher reported from Hong Kong.*

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March 21, 2012

## Political and Construction Hurdles for Malaysia Rare Earths Plant

By LIZ GOOCH and [KEITH BRADSHER](#)

KUALA LUMPUR, Malaysia — A [controversial rare earth metal refinery in Malaysia](#) encountered further obstacles this week, with the country’s political opposition refusing to participate in a parliamentary committee set up to investigate the safety of the plant and with hints that the refinery could face further construction delays.

The plant, which is being built by the Australian company Lynas, is one of two giant projects intended to break China’s near-monopoly on the production of rare earths; the other is in the California desert near Death Valley. But the Malaysian project, on the outskirts of Kuantan, one of the country’s largest cities, has become a lightning rod for activists and residents concerned about possible radiation leaks.

Rare earths are used for a wide range of high-technology products, including smartphones, smart bombs and [electric cars](#). They are found in nature with radioactive contaminants that must be separated and disposed of during refining.

Lynas says that its ore, mined in the Australian desert, has a lower concentration of these contaminants than many rare earth deposits elsewhere.

The refinery has received a temporary operating license from the Malaysian government, but the project has already had a series of delays and protests. Last month, demonstrations in Kuantan and at least three other cities around the country, including Kuala Lumpur, attracted thousands of protesters.

The Kuala Lumpur High Court on Tuesday directed Malaysia's Atomic Energy Licensing Board to provide details of the temporary license that it gave Lynas. The court acted after a group of residents near the refinery filed an application for a judicial review of the license, said K. Shanmuga, one of the group's lawyers.

Lynas originally planned to finish the factory by last September, despite warnings by engineers that it would not be ready then. But the company ran into delays and ended up announcing in the fall that the project would not be finished until the second quarter of this year.

An engineer with a detailed knowledge of the project said Wednesday that another delay had come up in recent days. Complex electronic components that require a long time to manufacture were ordered late and will not be ready for the first phase of the refinery's construction until November, said the engineer, who requested anonymity to avoid retaliation by Lynas in the close-knit mineral processing industry.

Parts of the refinery can be commissioned without the components, including kilns for drying ore, the engineer said, but other sections of the production process require the components.

Lynas denied that it was facing further construction delays, saying in a statement that any parts arriving late this year would be for either a spare parts inventory or a planned second phase that would double the capacity of the refinery.

"Attempts to characterize it otherwise are either misinformed or a deliberate distortion," the company said.

The engineer disagreed, insisting that the parts were needed for the first phase.

The United States, the European Union and Japan [filed a complaint with the World Trade Organization last week against China](#), accusing it of violating free trade rules with its quotas and taxes on rare earth exports. Japan announced Wednesday that Steven Chu, energy secretary of the United States, would join senior European and Japanese officials for talks in Tokyo next Wednesday on ways to recycle rare earths or develop alternative supplies.

Attempts by Lynas to reassure the public that the plant is safe have failed to satisfy activists and opposition parties.

The Malaysian government announced Saturday that it would establish a bipartisan parliamentary committee to investigate public concerns about the safety of the plant. Critics



assailed the move as a public relations exercise in advance of [elections widely expected to be held later this year](#).

The committee was to include four members from the governing coalition, three from the opposition and one independent member. But on Tuesday, the opposition announced that it would boycott the panel.

Fuziah Salleh, the opposition member of Parliament for Kuantan who has been a leader of the protest movement, said the opposition had decided not to take part in the committee because the government was using the panel to try to quell public worries. She contended that the government would allow the plant to go ahead regardless of the committee's findings.

Prime Minister Najib Razak has said that the committee was being set up to engage with the public but that it would not decide the fate of the project, [according to a report Saturday](#) by the national news agency Bernama.

"It's a fait accompli right from the beginning," Ms. Fuziah said.

She said the opposition had requested a number of conditions, like a stop-work order on the plant while the committee's investigation took place and a revocation of Lynas's temporary license until the committee had issued its findings. But she said the government had refused to accept the opposition's requests.

"We made it clear that for the committee to be effective, the select committee should be given the mandate to decide on the safety and what is the final outcome," she said. "However, the government side is only keen to use the select committee as a public relations tool to engage with the public to allay the fear and concerns regarding the safety."

Ms. Fuziah said she had been hopeful that the opposition could participate in the committee, but "finally we decided that it would be a waste of time because they have already decided," she said.

According to the Bernama report, Mr. Najib said he hoped the committee could raise awareness of the project so that "we can achieve comfort in terms of better public acceptance."

Khaled Nordin, the minister of higher education and the head of the committee, said Wednesday that Parliament had approved the establishment of the committee and that he expected the names of the committee members to be announced Thursday.

He said the opposition's decision not to participate in the committee was "political."

James Chin, a political scientist and the director of the School of Arts and Social Sciences at Monash University in Malaysia, said that under the rules of Parliament, the government could still proceed with the panel even if the opposition refused to take part.

Mr. Chin said that the safety of the plant could become a concern for more voters but that for now it was mainly an issue for people who lived near the refinery.

“For the other members of the general public, it’s not really a big issue yet,” he said. “It has the potential of becoming a really big issue, so it depends on how the government handles it.”

Ms. Fuziah said another rally was planned for next month.

Liz Gooch reported from Kuala Lumpur, and Keith Bradsher from Hong Kong.