

## West dependent on China for key resources

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**China controls the world's supply of rare earth metals. It might not be willing to share much longer.**

By Piet Depuydt

A plaque hangs in the lobby of Baogang Group's headquarters. "The Middle East has oil, China has rare metals." The words are attributed to former Chinese leader Deng Xiaoping and have the force of an oracle for many Chinese.

China holds 95 percent of the globe's 'rare earth elements', which are almost as essential to Western industry as oil. The export centre for these metals is Baotou in Inner Mongolia, where the Baogang group has its headquarters. Here, this state company produces nearly half of the world's supply of neodymium. This metal is practically unknown, but it has fundamentally changed the appearance of consumer electronics.



"Without the powerful magnets developed using neodymium, makers of mobile phones and mp3 players would not have been able to carry out extensive miniaturisation," says André Diederer of the Dutch research institute TNO.

At least 500 grams of neodymium is needed in every hybrid car to make the magnets in the engine work. The deep blue material is also an essential element for the latest generation of powerful wind turbines. A 16 metre high turbine produces an average of five megawatts of energy; about 200 kilograms of the metal is needed for every megawatt.

### Technology cannot do without rare metals

Experts estimate that global demand for neodymium will rise by a factor of 3.8 by 2030. Demand for other elements in the rich earth of Baotou – cerium, praseodymium en lanthanum – has increased exponentially in recent years. They are not only used for numerous Western devices, such as energy efficient light bulbs or smart air-emissions detection systems, but are of strategic importance for Chinese industry itself. At least 60 percent of the rare earth metals extracted in Baotou are intended for Chinese use.

This creates concern in the market. "The Chinese government wants to do everything to secure the flow of these metals for their own industry," says Michel Rademaker of the The Hague Centre for Strategic Studies. "They have imposed export quotas which get stricter every year."

Last summer, an internal memo from the Beijing government was leaked which proposed that exports of rare earth metals should be limited in the following six years to 35.000 tons per year, far below expected demand. There report stirred commotion among industrial experts in Europe, Japan and the US. "It rubbed our noses in the facts," says Derk Bol of the Materials Innovation Institute (M2i) in Delft. "Scarcity of materials suddenly became a real threat."

If China really implements this measure, shortages of certain metals, such as terbium and dysprosium, are expected this year. One of these metals is used in the production of energy saving light bulbs, the other in lasers.

### **Global use has quadrupled**

But even if this measure is not implemented, shortages are unavoidable. Global use of rare earth metals has more than quadrupled in the last years to 125,000 tons per year. Analysts expect demand to reach 200,000 tons in 2014, and, by that time, China will need all it produces for its own use.

"Chinese exports of rare earth metals will be reduced to zero over time," says Christian Hocquard, economist and raw materials expert at the French geological service BRGM. This is a doom scenario for Western industrial experts. Numerous high-tech industries in Europe, Asia and the US will be without essential raw materials.

According to Hocquard there are only two ways to avoid this. "We relocate our factories to China, or open new mines for rare earth metals outside China."

### **Western mines re-open for business**

China actually has only 53 percent of world supplies within its borders. In the West, overproduction and low prices in the 1990s caused most mines to close. The recent increase in demand has overturned that situation. A kilo of neodymium goes for 22 dollars now, five times as much as in 2002. Dysprosium's value is ten times what it was in 2002.

But it will cost a lot to reopen the old mines. A whole new industry has to be built. Mountain Pass in the US was reopened in 2007, but will only reach full production sometime this year. In Australia, the Mount Weld mine is expected to produce rare earth metals on a large scale from this year. But last year the company that owns it sold 51.6 percent of its shares to a Chinese company in exchange for cash and debt financing. The search for rare earth metals is a global race.

Europe has no role to play. It has no major deposits of rare earth minerals in the ground and must depend on the rest of the world for supplies. If China stops the supply, the EU will have acute shortages. Beijing's party leaders deny that they intend to do that. China doesn't want to hold the European industry hostage, officials stress. Around Hexi Industrial Zone, Baogang Group's technology park, an active campaign is underway to lure European companies to open factories there in exchange for access to rare earth metals. Baotou hopes to expand into a giant industrial site where the raw metals are refined and converted into finished products. It wants to be the global Mecca of rare earth metals, and the West is welcome to take part in this.

### **Background**

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### No make up



Igor Kruter portrayed Israel's fighting women, caught between beauty and brutality.

### Defriending



Never mind Facebook. The Dutch 'defriended' as far back as 1626.

### Iraq



The run-up to Iraq was botched, some say. Should Balkenende resign?

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