



# Japanese Rare Metals Policy

**Michihiro Kishimoto**

General Manager, Washington Office

**Japan Oil, Gas and Metals National Corporation**

# JOGMEC

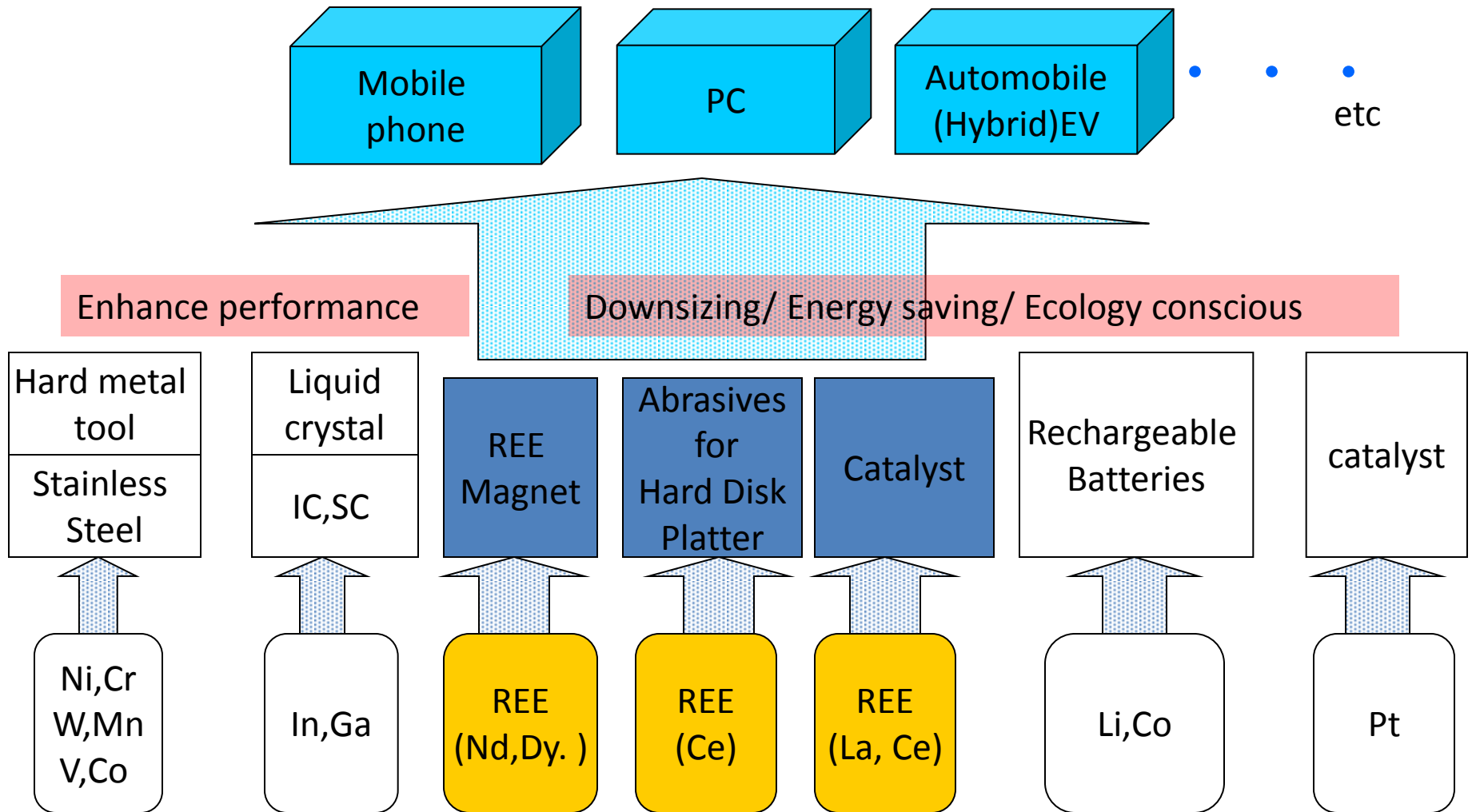
(Japan Oil, Gas and Metals National Corporation)

- Independent Administrative Institution
- Established : February 29, 2004  
(Succeeding the part of the Function of two Organization,  
Metal Mining Agency and Japan National Oil Corporation)
- Capital : 299 Billion Yen (Mar 31, 2010)
- Employees : 476 (April 1, 2010)
- Activities : (1)Financial Assistance  
(2)Geological Surveys  
(3)R&D  
(4)Stockpiling  
(5)Mine Pollution Control  
(6)Human Resource Development  
(7)Others

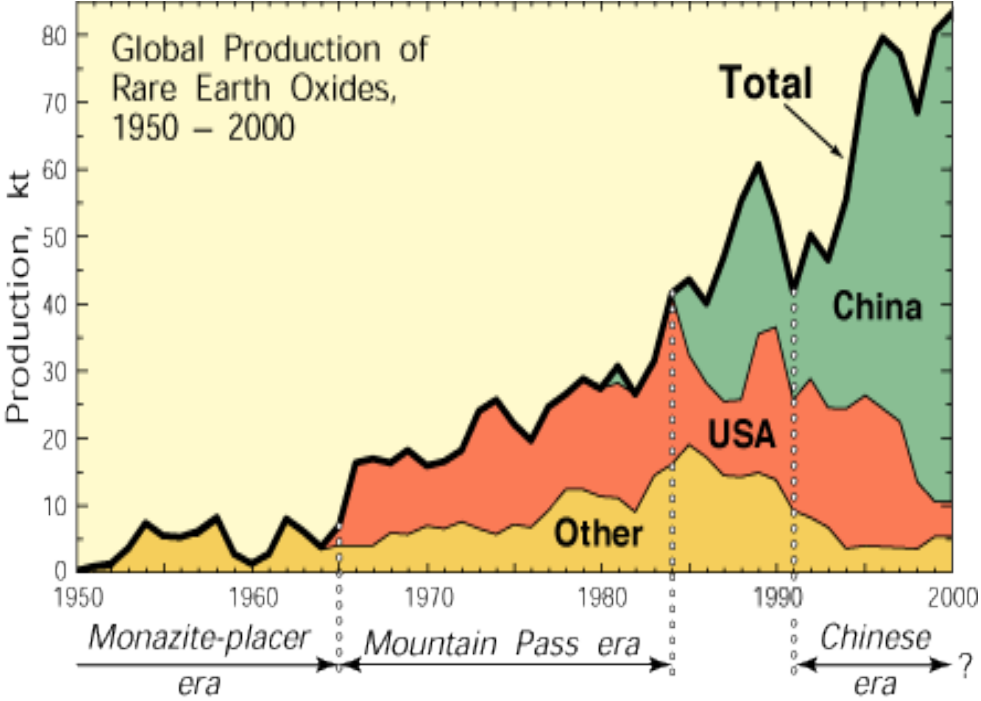
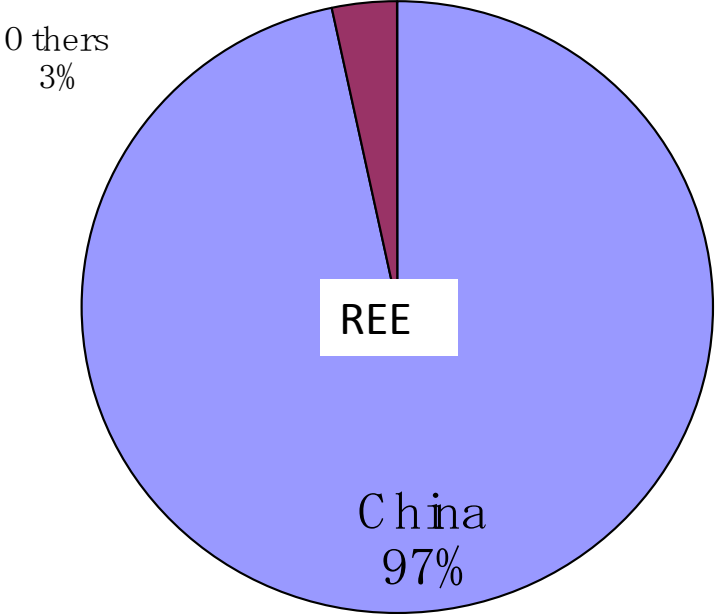


# How important Rare Earths are?

Rare Earths are essential materials for competitiveness of many high-tech industries



# Rare Earths producing Countries



Data:USGS

# Changes of Chinese Export Quotas on Rare Earth

	2005	2006	2007	2008	2009	2010
<b>Export quotas on rare earths (ton)</b>						
Domestic companies	50,000	45,500	43,673	34,156	33,300	22,513
Foreign-affiliated companies	17,570	16,060	16,500	13,293	16,845	7,746
<b>Total</b>	<b>67,570</b>	<b>61,560</b>	<b>60,173</b>	<b>47,449</b>	<b>50,145</b>	<b>30,259</b>

## Comparison of the same period in 2009 and 2010

Export quotas on rare earths (ton)	2009			2010		
	First	Second	Total	First	Second	Total
Domestic companies	15,043	18,257	33,300	16,305	6,208	22,513
Foreign-affiliated companies	6,685	10,160	16,845	5,978	1,768	7,746
<b>Total</b>	<b>21,728</b>	<b>28,417</b>	<b>50,145</b>	<b>22,283</b>	<b>7,976</b>	<b>30,259</b>

- 70%

- 40%

# Supply Chain of Rare Earths

## Personal Computer

Abrasives



Hard disk platter



Hard disk drive



Personal Computer

Rare earth  
Cerium oxide



Western Digital (US),  
Seagate (US), etc.

Hewlett-Packard (US),  
Dell (US), Gateway (US), etc.

## Exhaust Gas Catalyst

Catalyst material



3-way catalyst

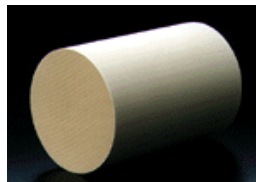


Catalytic converter



Automobile

Rare earth  
Cerium carbonate



General Motors (US),  
Ford (US), Chrysler (US), etc.

# Fluid Catalytic Cracking (FCC) Catalyst

Catalyst material



FCC catalyst



Oil refinery

Rare earths  
Lanthanum oxide  
Cerium chloride



Grace (US)  
Albemarle (US), etc.



Caltex (US)  
Exxon Mobil (US), etc.

# Permanent Magnet

Magnet material



Magnet alloy



Permanent magnet



Motor

Rare earths  
Dysprosium metal  
Neodymium metal  
Samarium metal



Automobile



General Motors (US),  
Ford (US),  
Chrysler (US), etc.

Hard disk drive



Western Digital (US),  
Seagate (US), etc.

Wind-power  
generation



GE Energy (US), etc.

# Policy Package to Secure Rare Earths

(Ministry of Economy, Trade and Industry, Oct 2010 )

## 1. Development of substitute materials and technology to reduce resource use

### Dy: Dysprosium



Permanent magnets  
for various motors

### Ce: Cerium



Precision polishing of  
glass for LCDs

### Tb: Terbium

### Eu: Europium



Phosphor materials

- Accelerate the development of substitute materials and technology
- Promote international joint research cooperation (international clean energy technical cooperation)

## 2. Promotion of recycling rare earths

## 3. Diversifying source of rare earths supply



# Conclusion

- Rare Earths are important for the development of clean energy and other high tech industry of any country.
- Importance of secure supply of rare earths is recognized gradually by many governments.
- the Japanese government started a policy package for secure supply of rare earth.
- International cooperation is expected for the successful result of the policy and for the healthy growth of clean energy society.