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# *2007: An Hard Times for EMD Business*

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CITIC Dameng Mining Industries Ltd

IMI EPD China Meeting, May 21, 2008  
Sanya, Hainan, China

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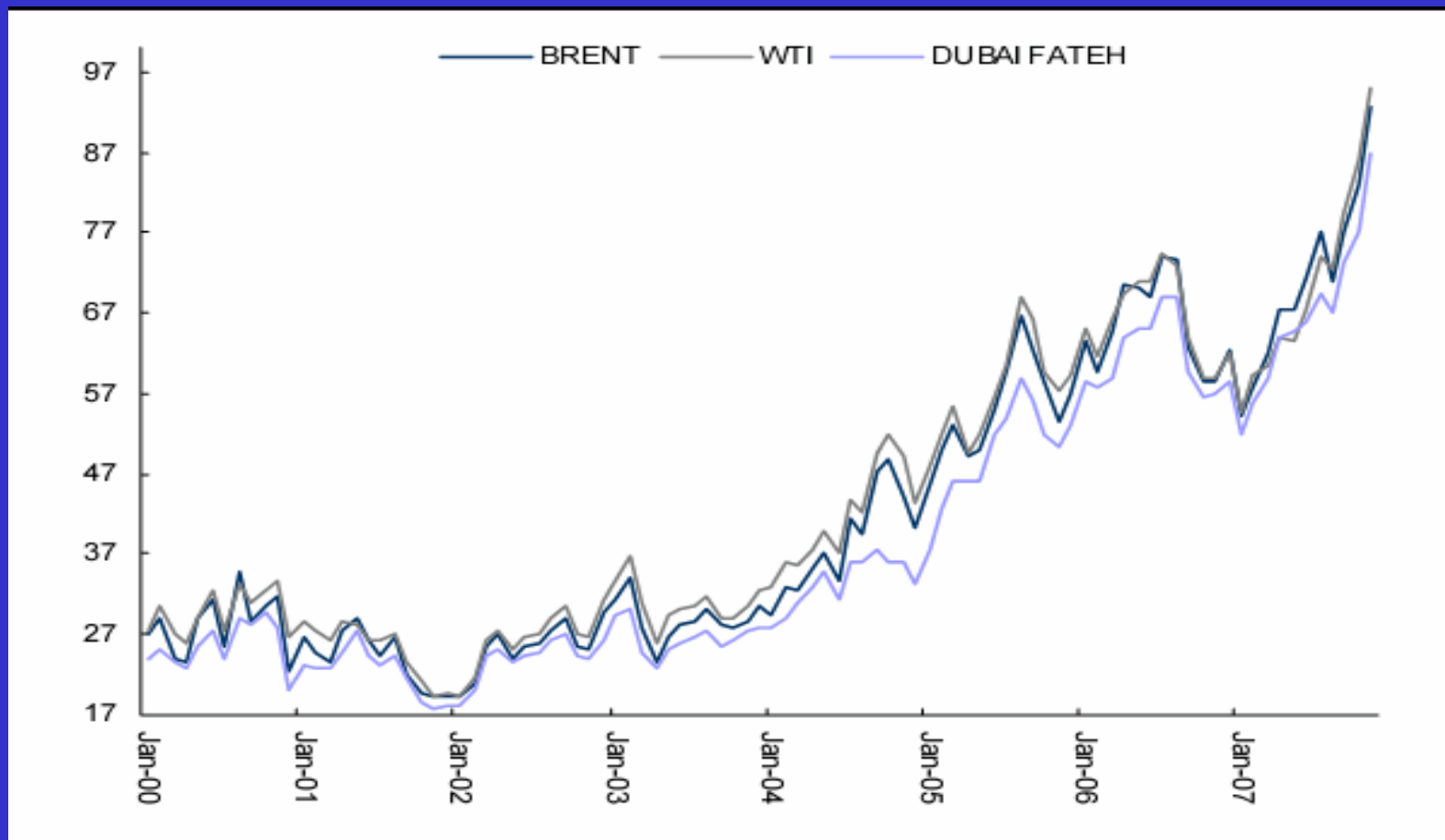


## **The headlines for 2007 EMD business were marked by a lot of depressed events:**

- The prices of all raw materials for EMD production increased substantially in 2007, and will likely continue to soar to new heights in 2008.
- The weakening of US dollar reduced most EMD producers' local currency (RBM, AUD, EURO) selling price, and will continue to do so in the future.
- The global EMD market remained over-supplied in 2007, and pricing was very competitive. The market selling prices had not afforded the recovery of higher ore cost and other inputs cost increases.



# International Oil Price Trends 2000-2007

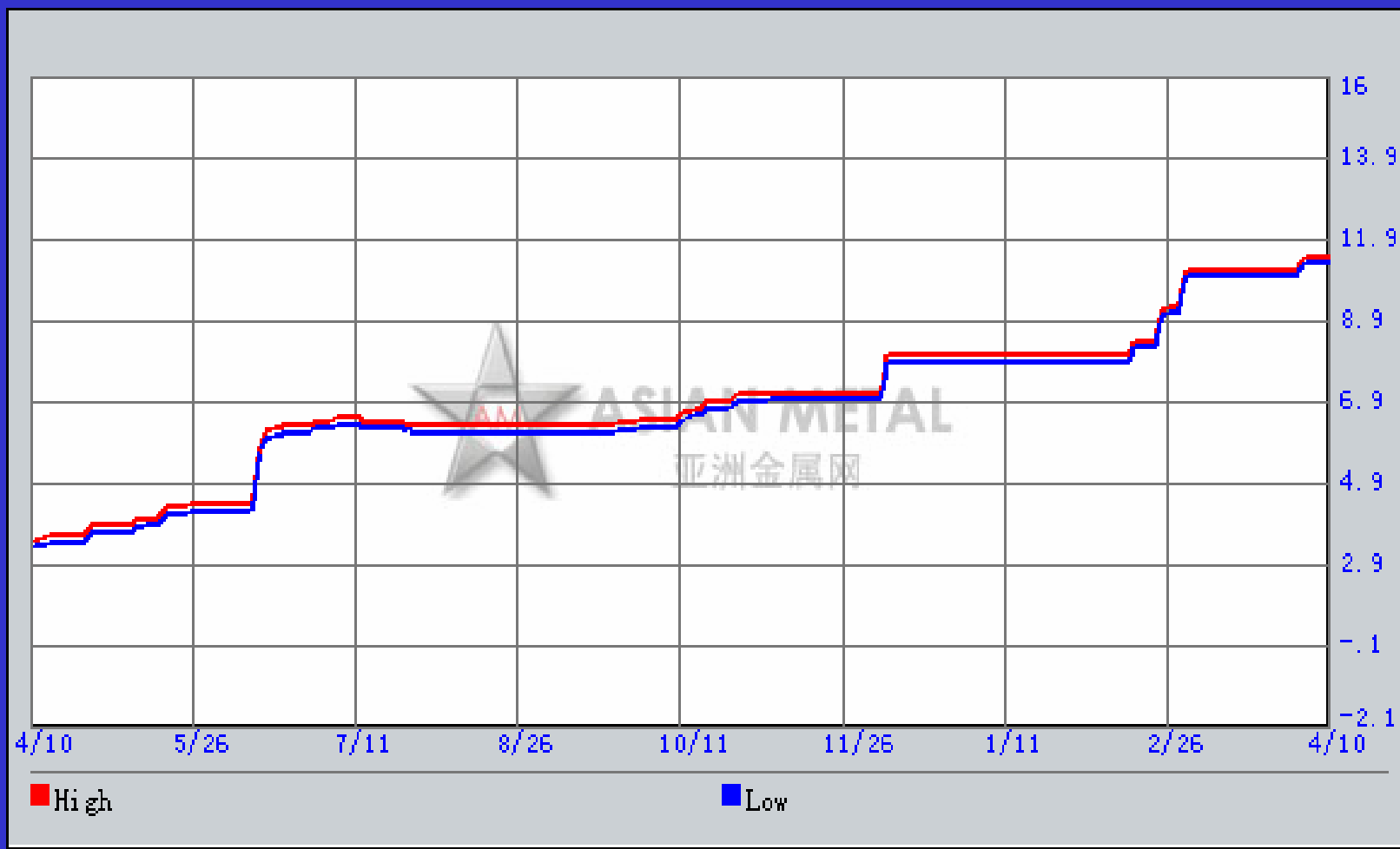




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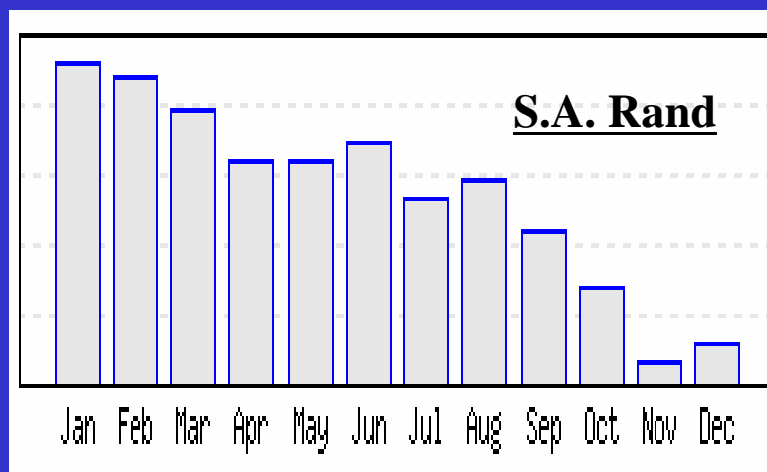
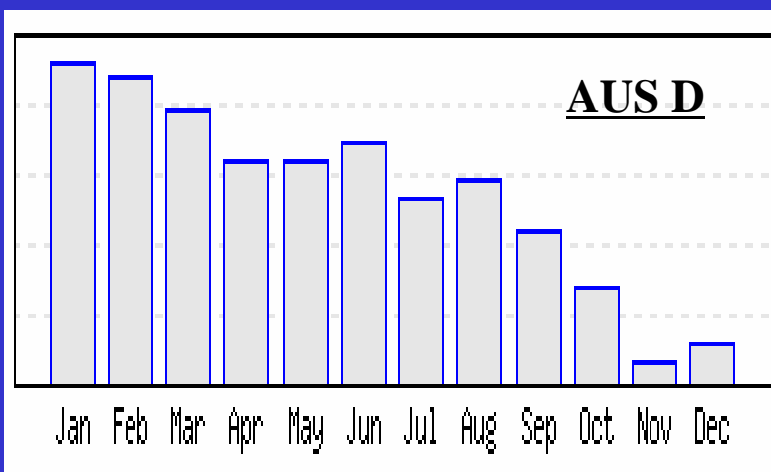
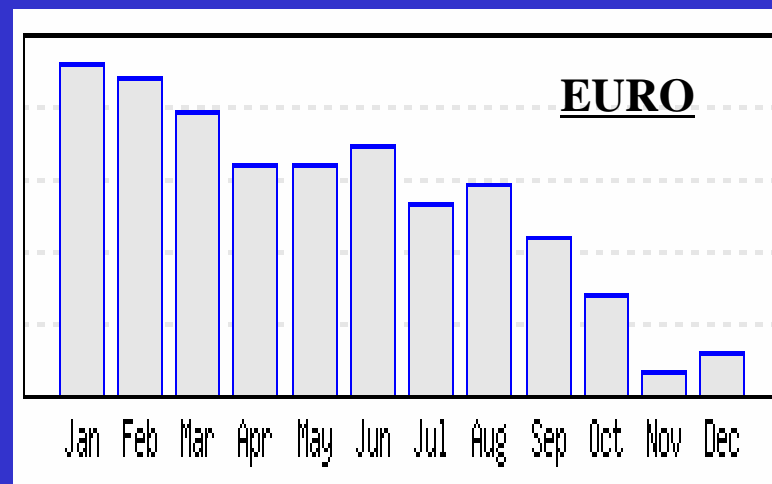
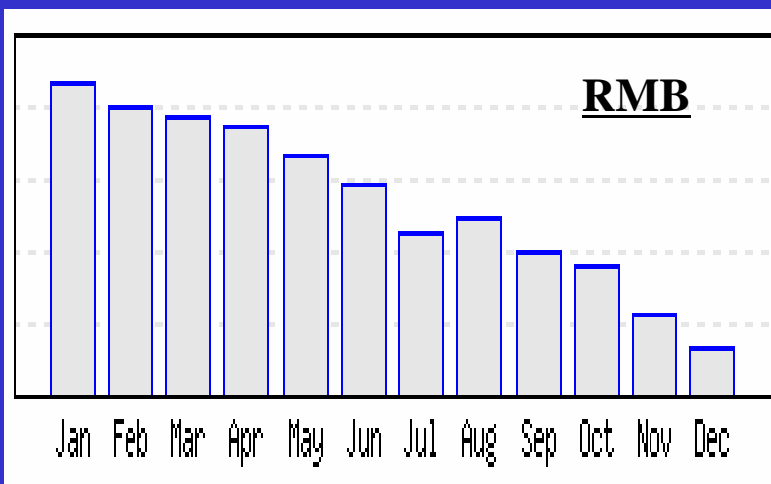
# Price Curve for Mn Ore

43-45% CIF China USD/mtu 2007-04-10--- 2008-04-10





# Selected Foreign Exchange Rate Trends to US Dollar in 2007





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- Greece, Japan and US initiated separately anti-dumping investigations concerning EMD. The EMD produced by Delta in South Africa is subject to a 17.1% anti-dumping duty in Europe.
- After shutdown of EMD plants in Japan (Mitsui) , India (Eveready India) and Brazil in 2006, Delta declared that it is no longer able to compete globally and will close its EMD plant in Australia in March 2008.
- Most of EMD producers worldwide experienced substantial cost increases, vigorous price competition, resulting poor financial performance in 2007.



# Global EMD Business:

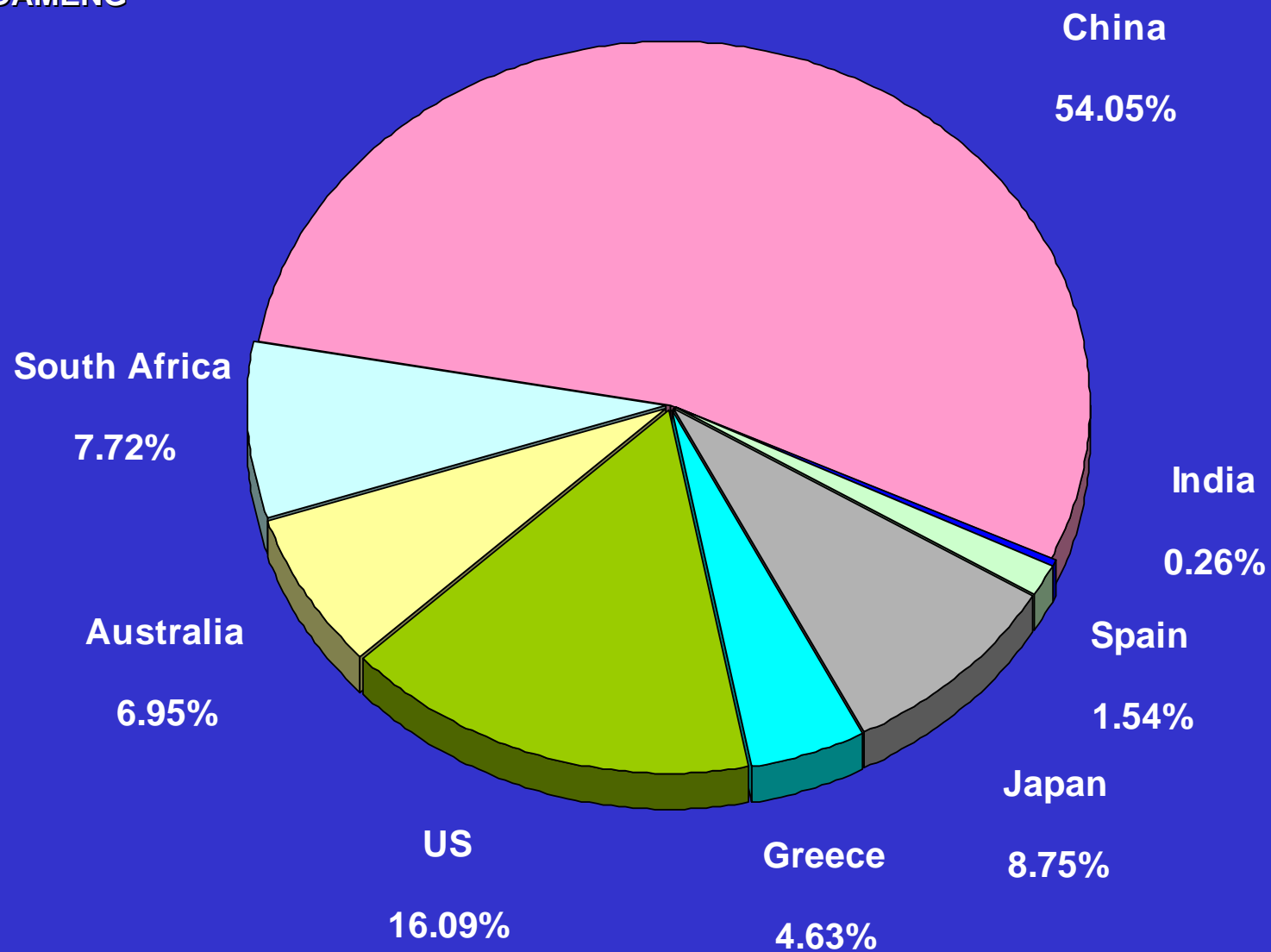
## 2007 World EMD Production Capacity

Country	Company	MT/Y	Country	Company	MT/Y
China	14 companies	210,000	U S	Erachem	24,000
Japan	Tosoh	34,000	U S	Eveready	12,000
Greece	Tosoh	18,000	Australia	Delta	27,000
Spain	Cegasa	6,000	South Africa	Delta	30,000
U S	Tronox	26,500	India	MOIL	1,000
<b>Total: 388,500</b>					



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## 2007 World EMD Production Capacity





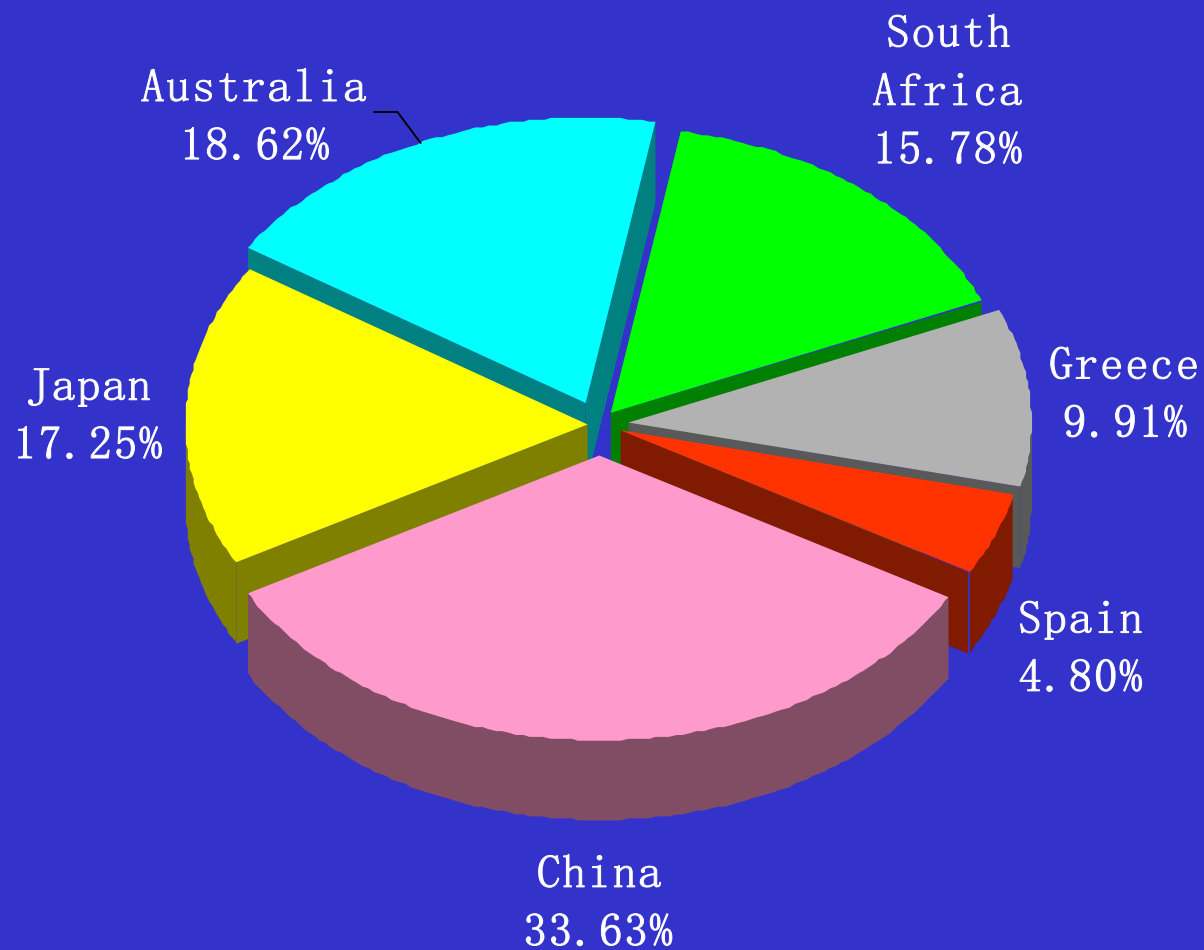
## EMD Exports by Country

Unit: MT

Country	2006	2007	Change %
China	52,758	47,057	- 10.81
Japan	29,341	24,138	- 17.73
Australia	24,000 <sup>e</sup>	27,096	+ 36.54
South Africa	25,696	22,085	- 14.05
Greece	12,327 <sup>e</sup>	13,872	+ 12.53
Spain	5,307	6,856	+ 29.19
Total	149,429	141,104	- 5.57



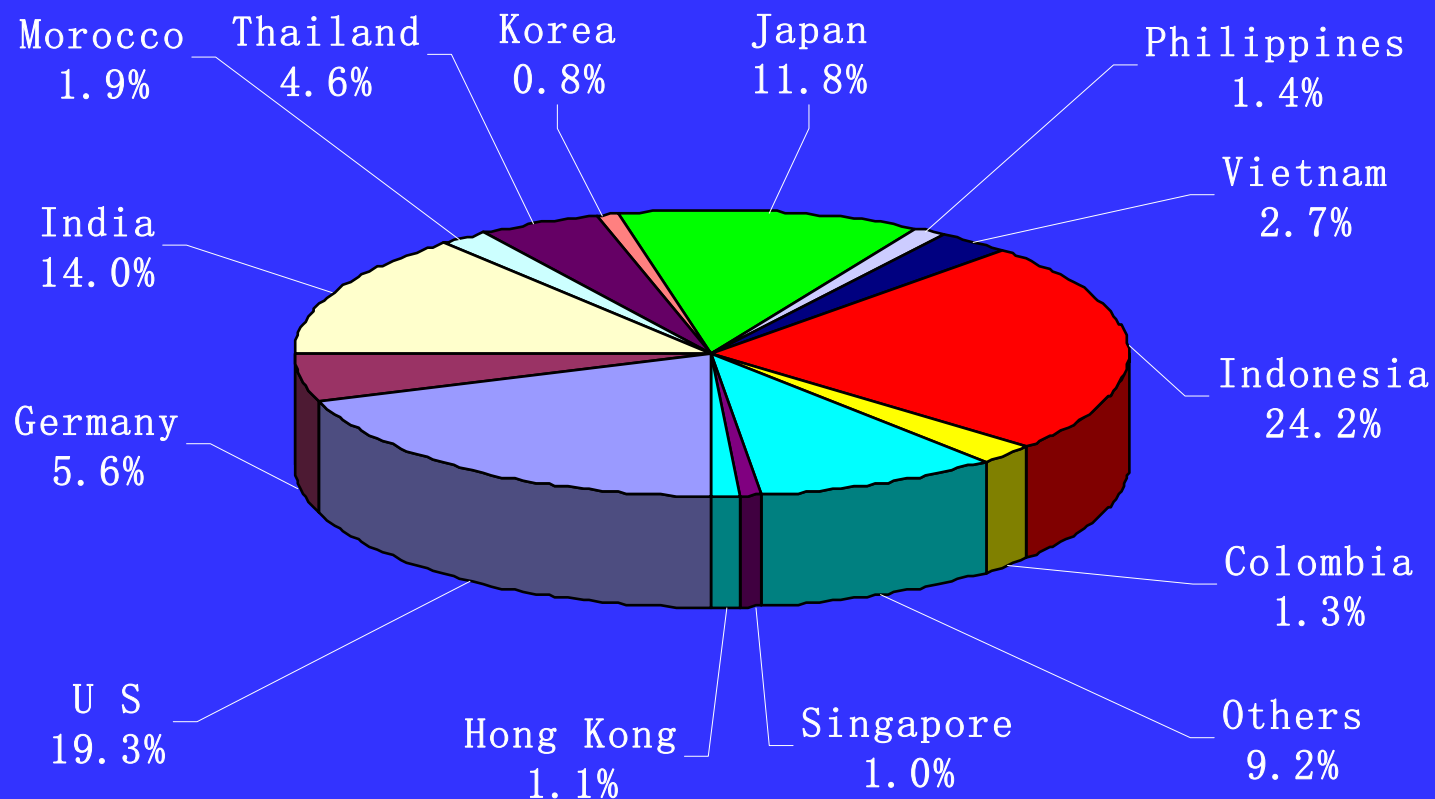
## 2007 Major EMD Exports by Country





# 2007 China EMD Exports by Country

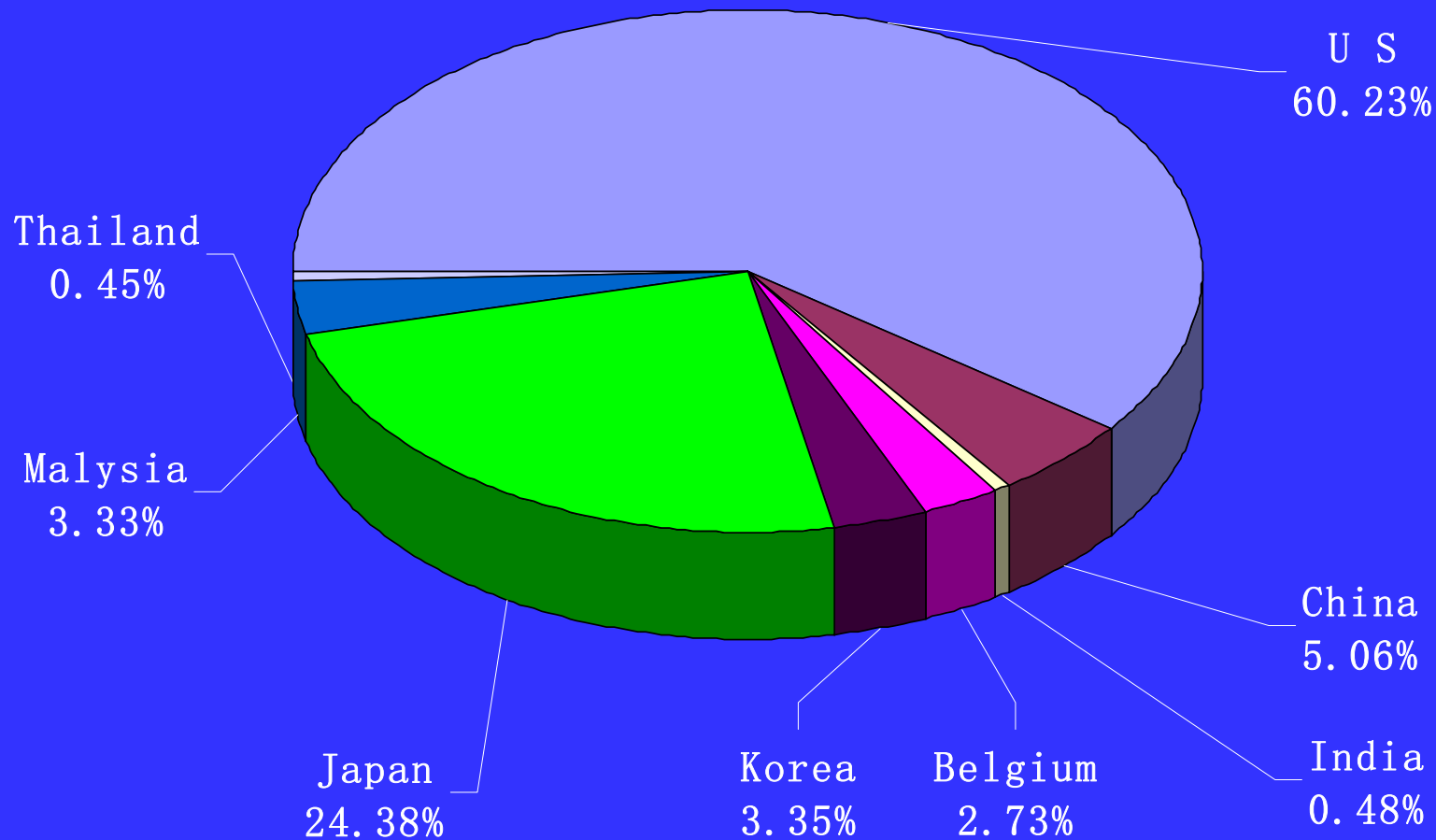
Total: 47,057 MT





## 2007 EMD Imports from Australia by Country

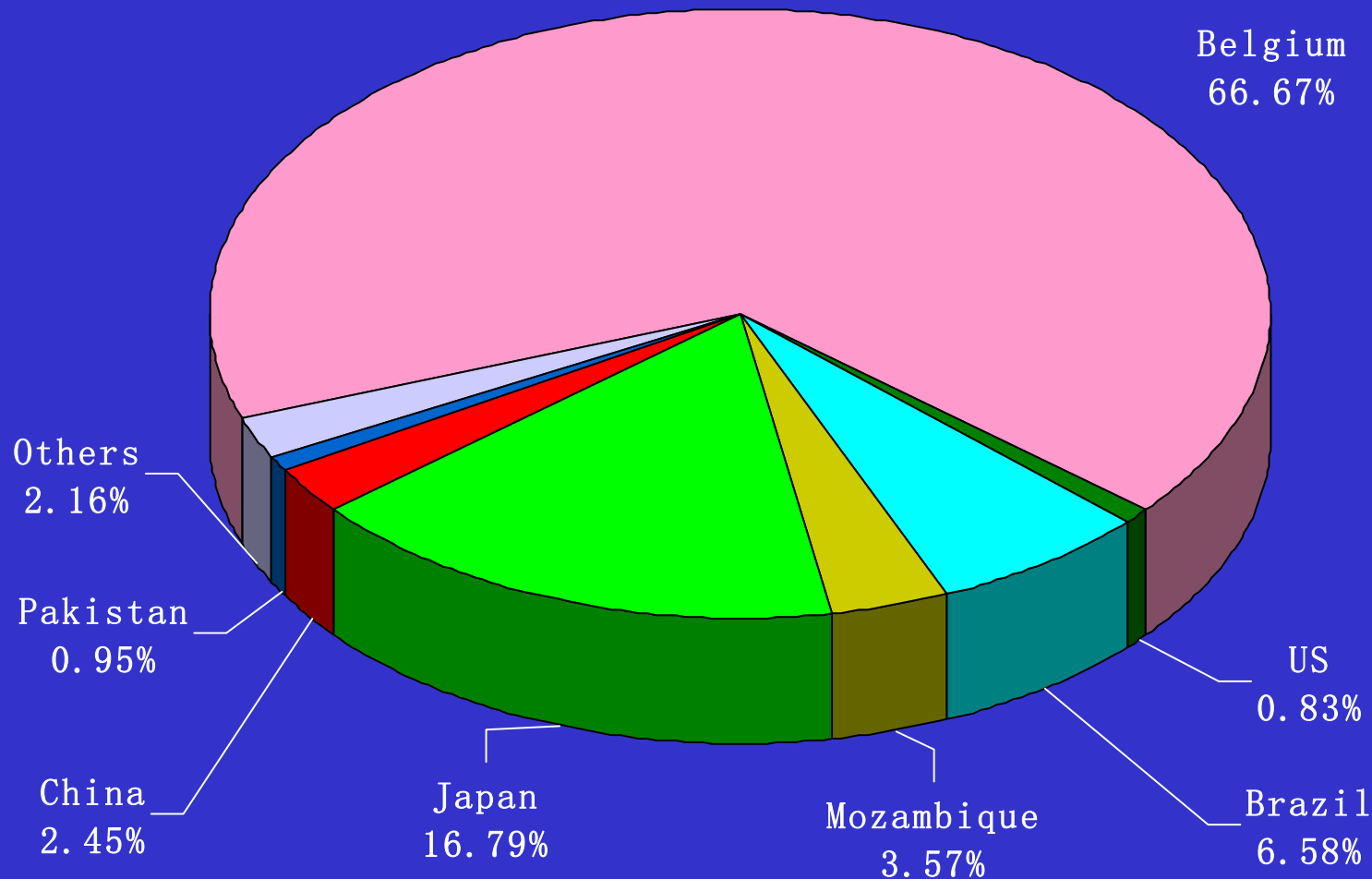
Total: 27,096 MT





# 2007 S. Africa EMD Exports by Country

Total 22,085 MT



Data Source: South Africa Customs

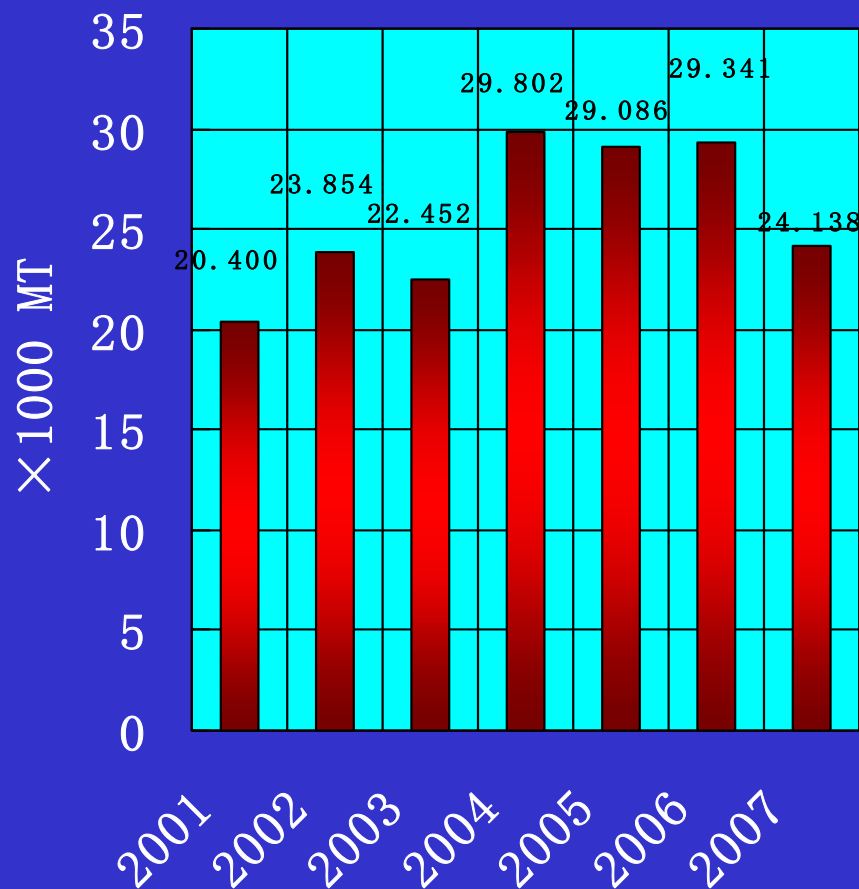
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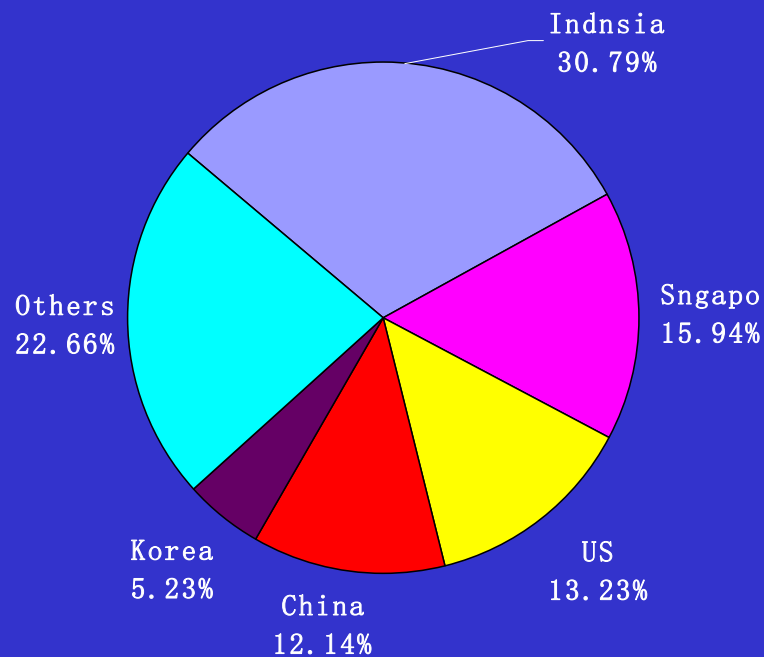
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# Japan EMD Exports

2001- 2007  
Japan EMD Exports



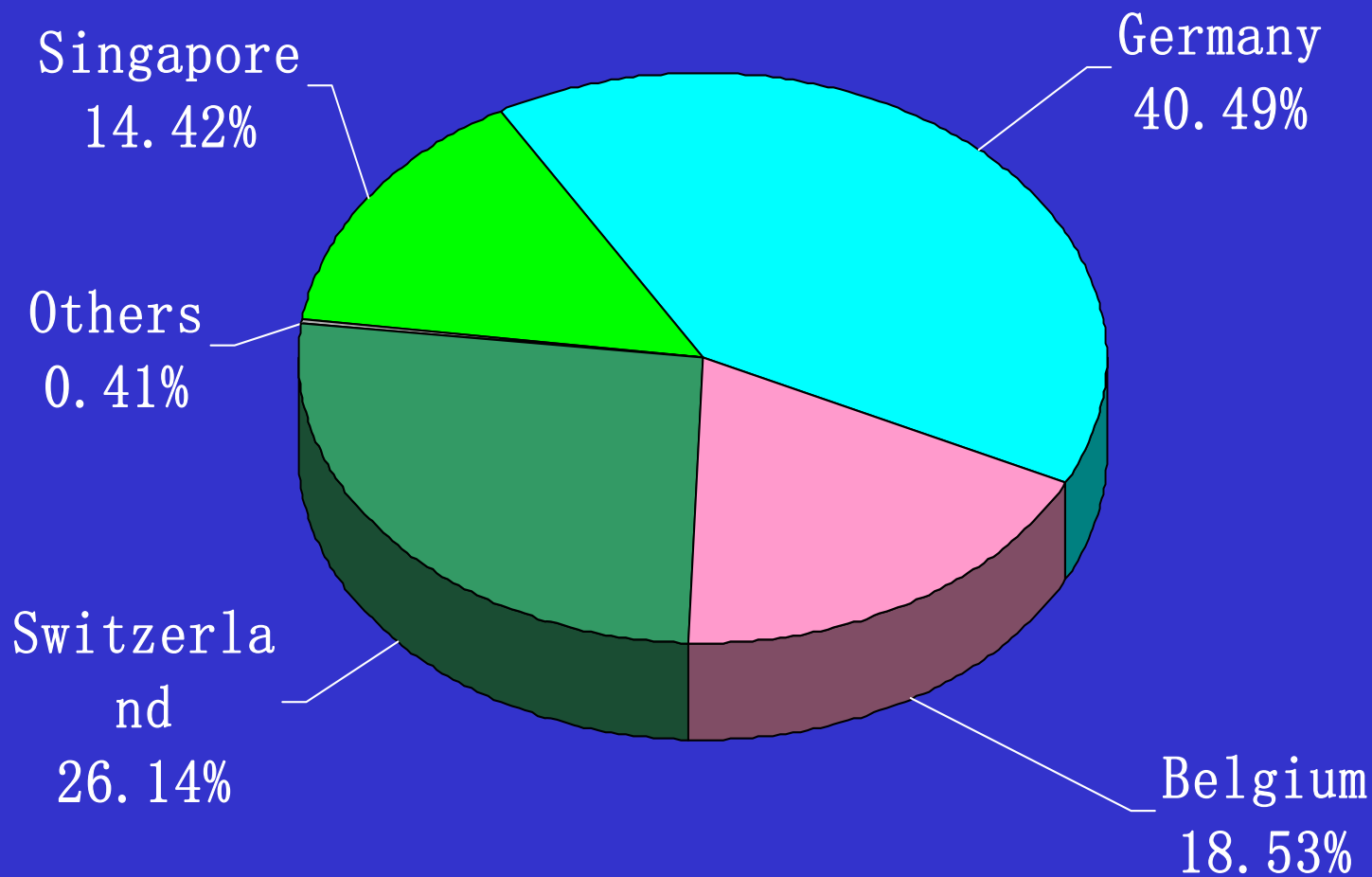
2007  
Japan EMD Exports





# 2007 EMD Imports from Greece by Country

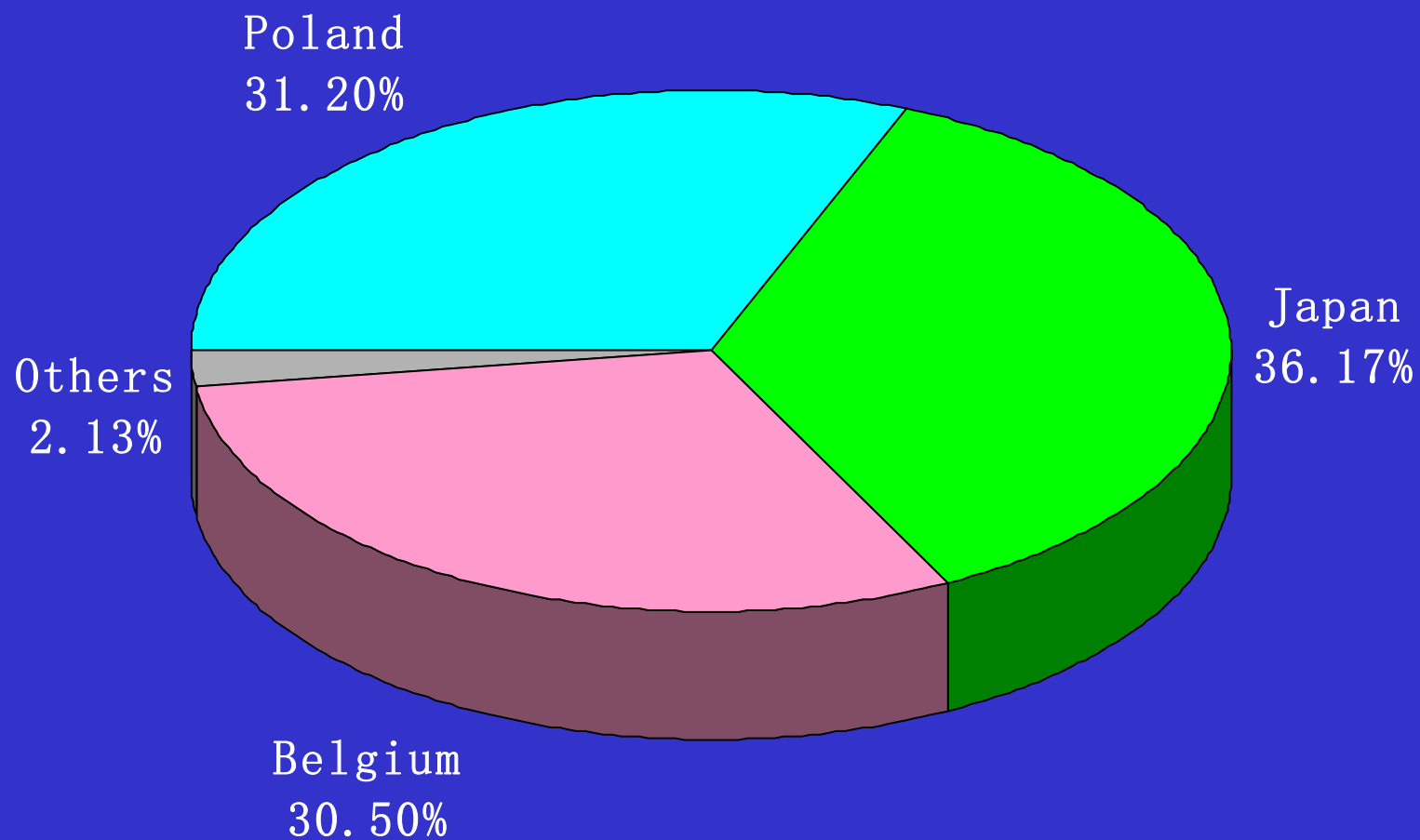
Total -- 13,872 MT





## 2007 EMD Imports from Spain by Country

Total – 6,856 MT





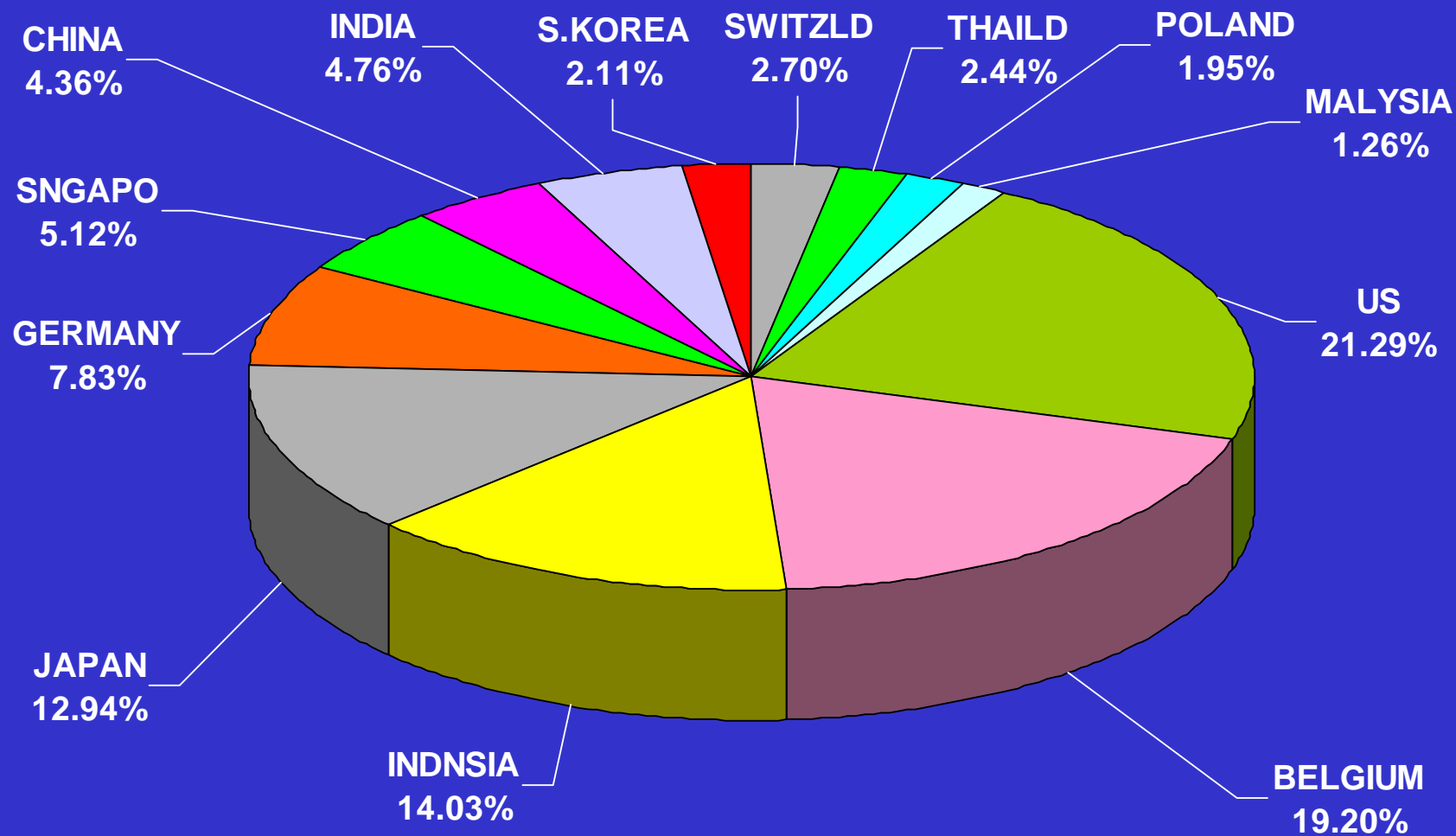
## 2007 Major EMD Imports by Country Unit: MT

Country	2006	2007	Change %
U S	36,861	30,118	- 13.44
Belgium	24,798	27,152	+ 9.49
Indonesia	21,760	19,841	- 8.82
Japan	14,050	18,300	+ 30.25
Germany	11,019	11,078	+ 0.54
Singapore	5,742	7,243	+ 26.14
China	7,942	6,161	- 22.43
India	8,966	6,730	- 24.94
South Korea	4,000	2,985	- 25.37
Switzerland	3,065	3,824	+ 24.76
Thailand	2,981	3,451	+ 15.77
Poland	2,146	2,763	+ 28.75
Malaysia	934	1,788	+ 91.43
Total	144,501	141,434	- 2.12



# 2007 Major EMD Imports by Country

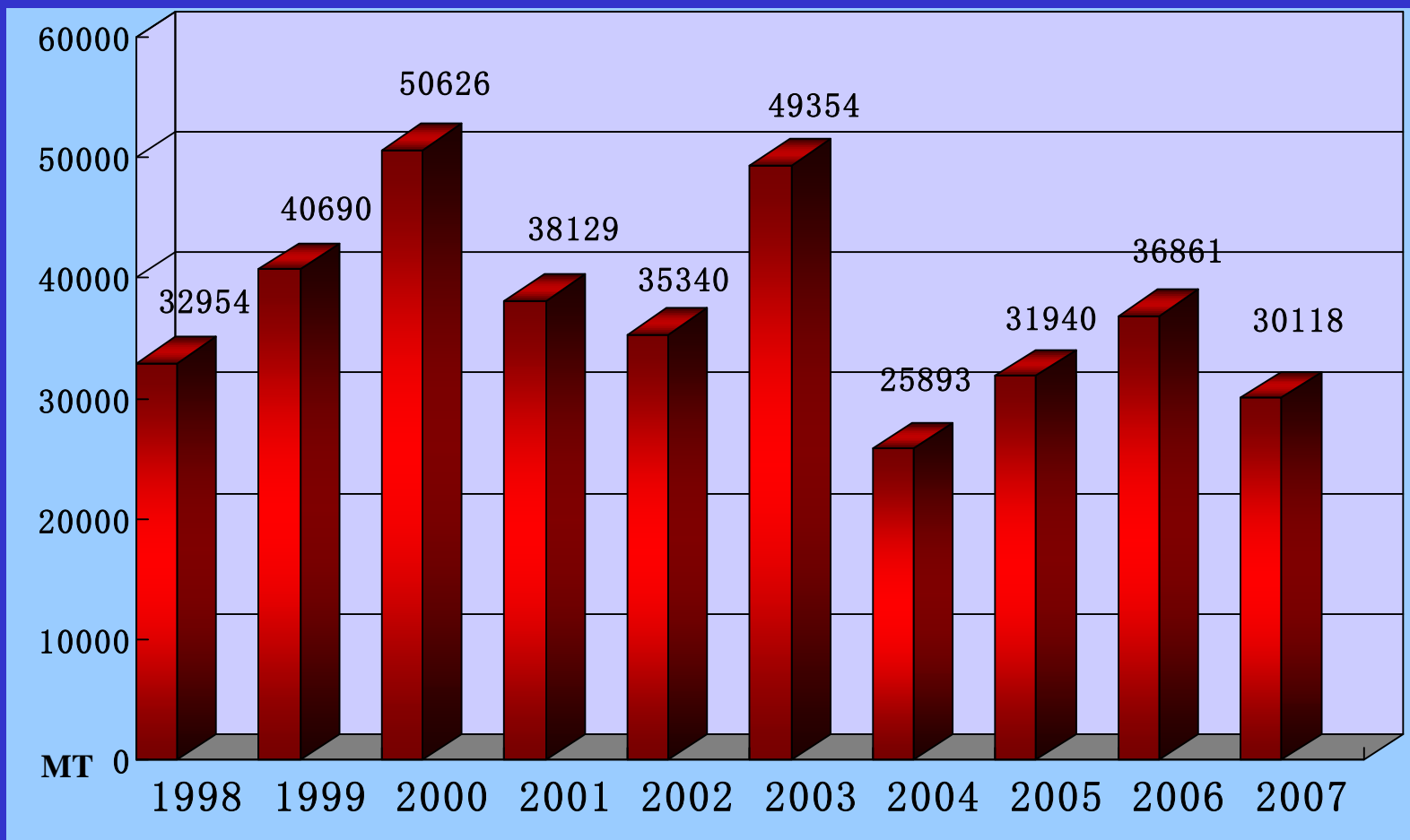
Total 141,434 MT





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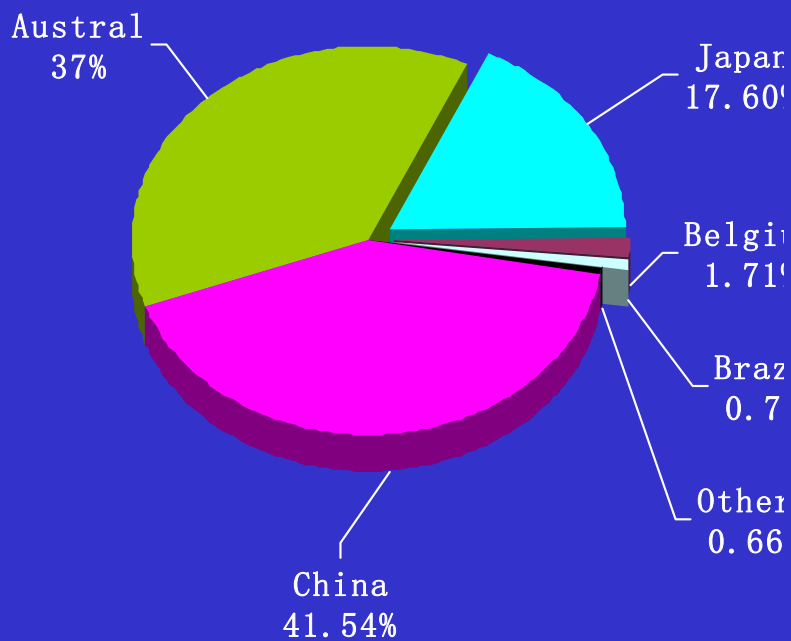
## 1996 – 2007 US Imports of EMD



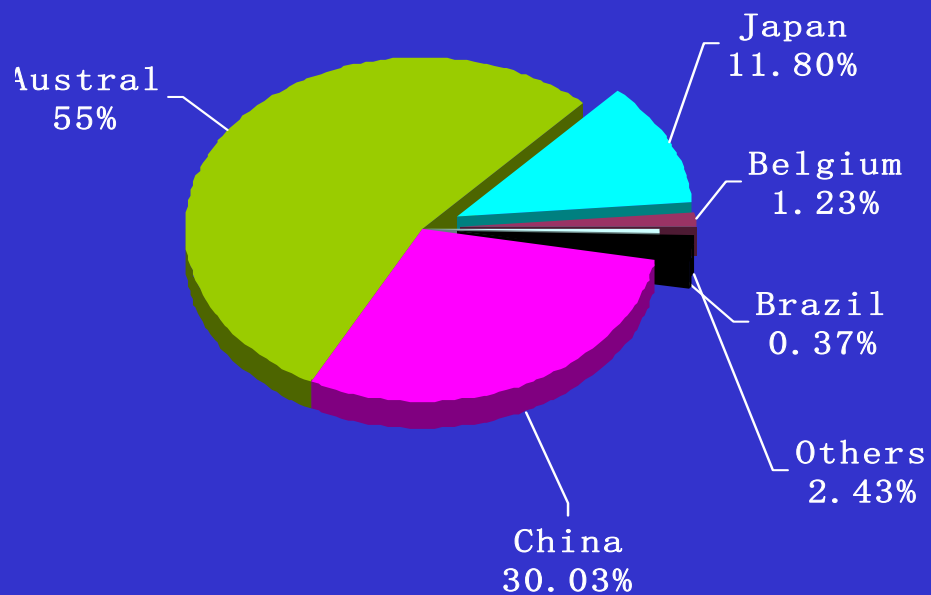


# 2006 - 2007 US EMD Imports by Country

2006 36,861 MT



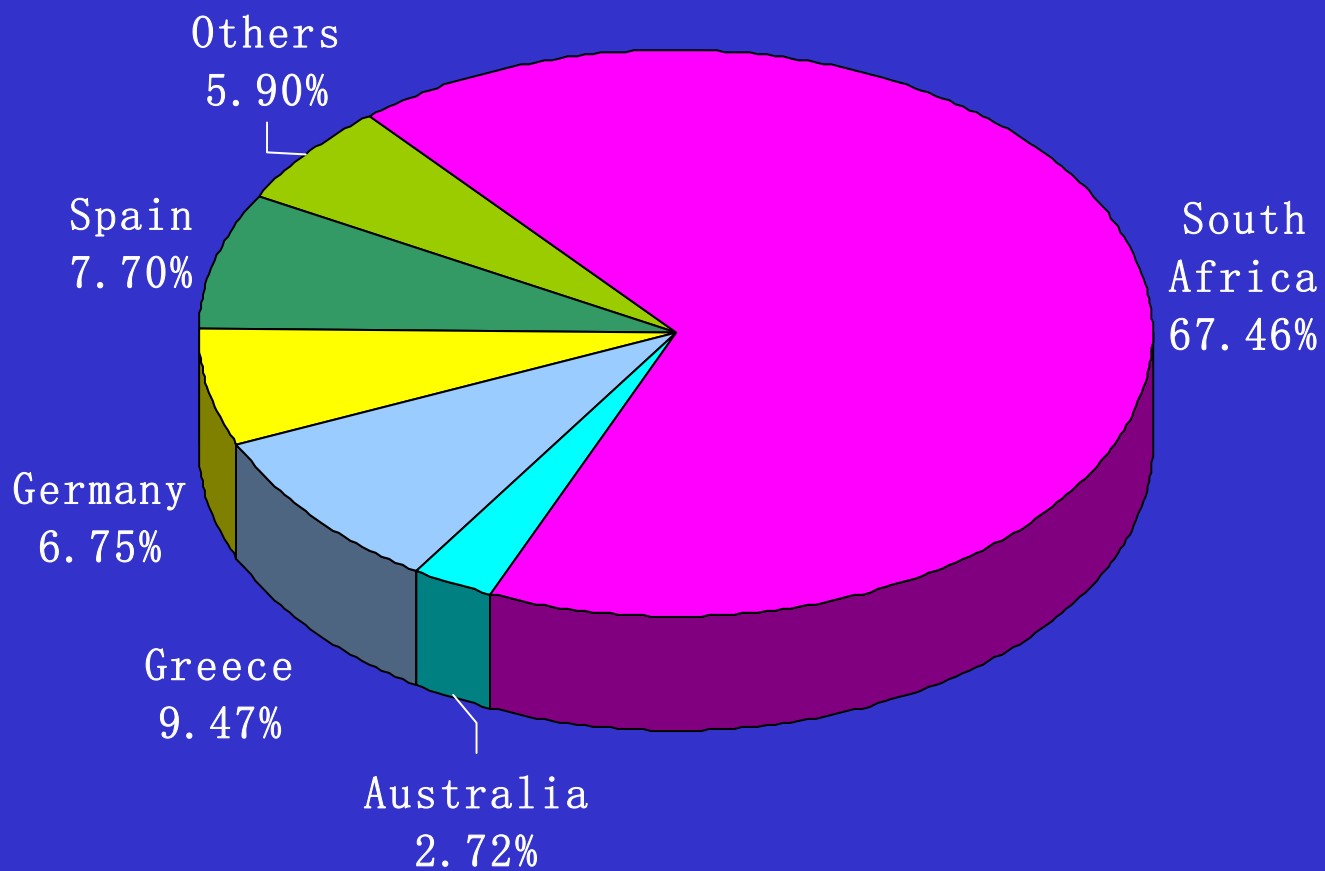
2007 30,118 MT





## 2007 Belgium EMD Imports by Country

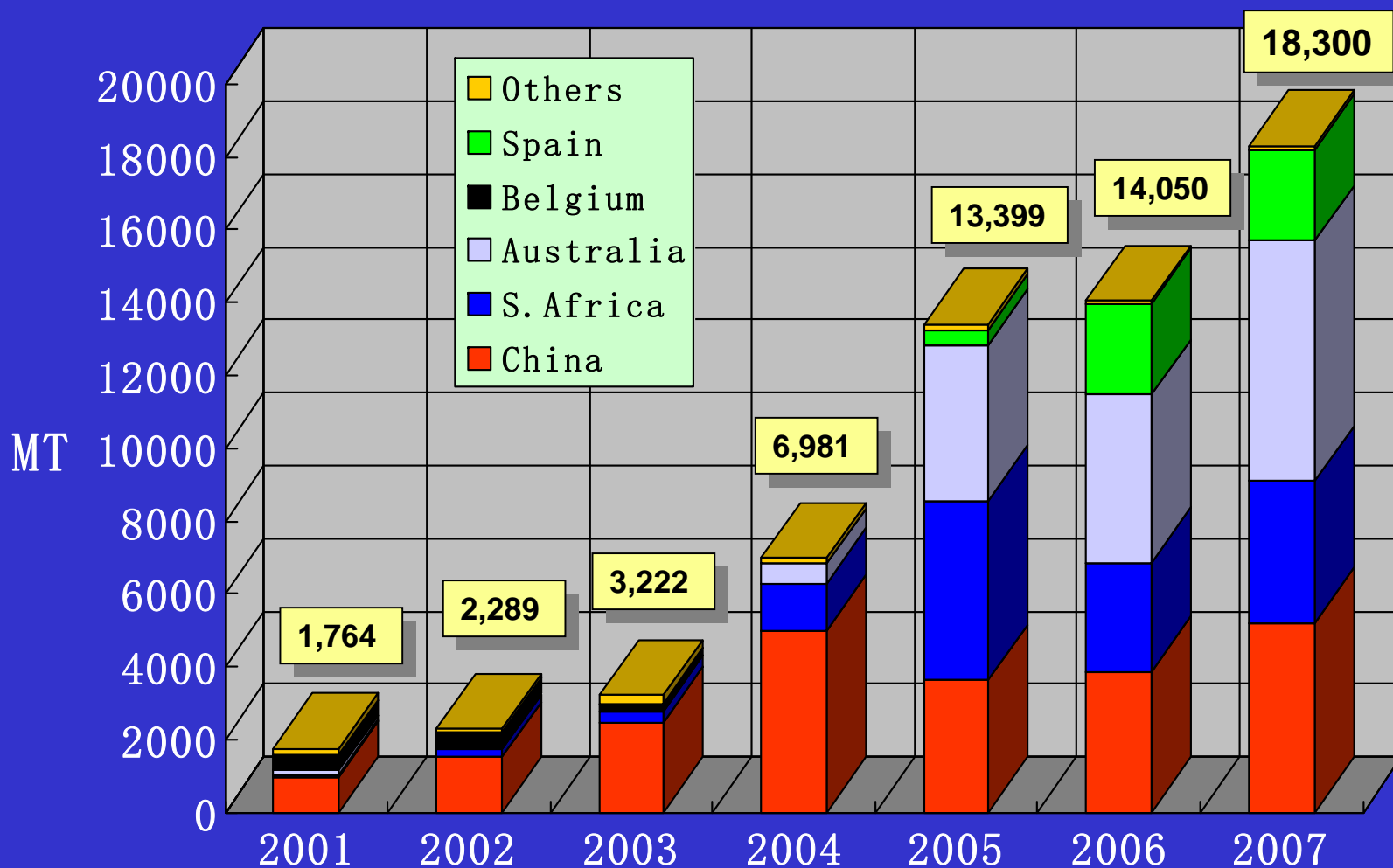
Total: 27,152 MT





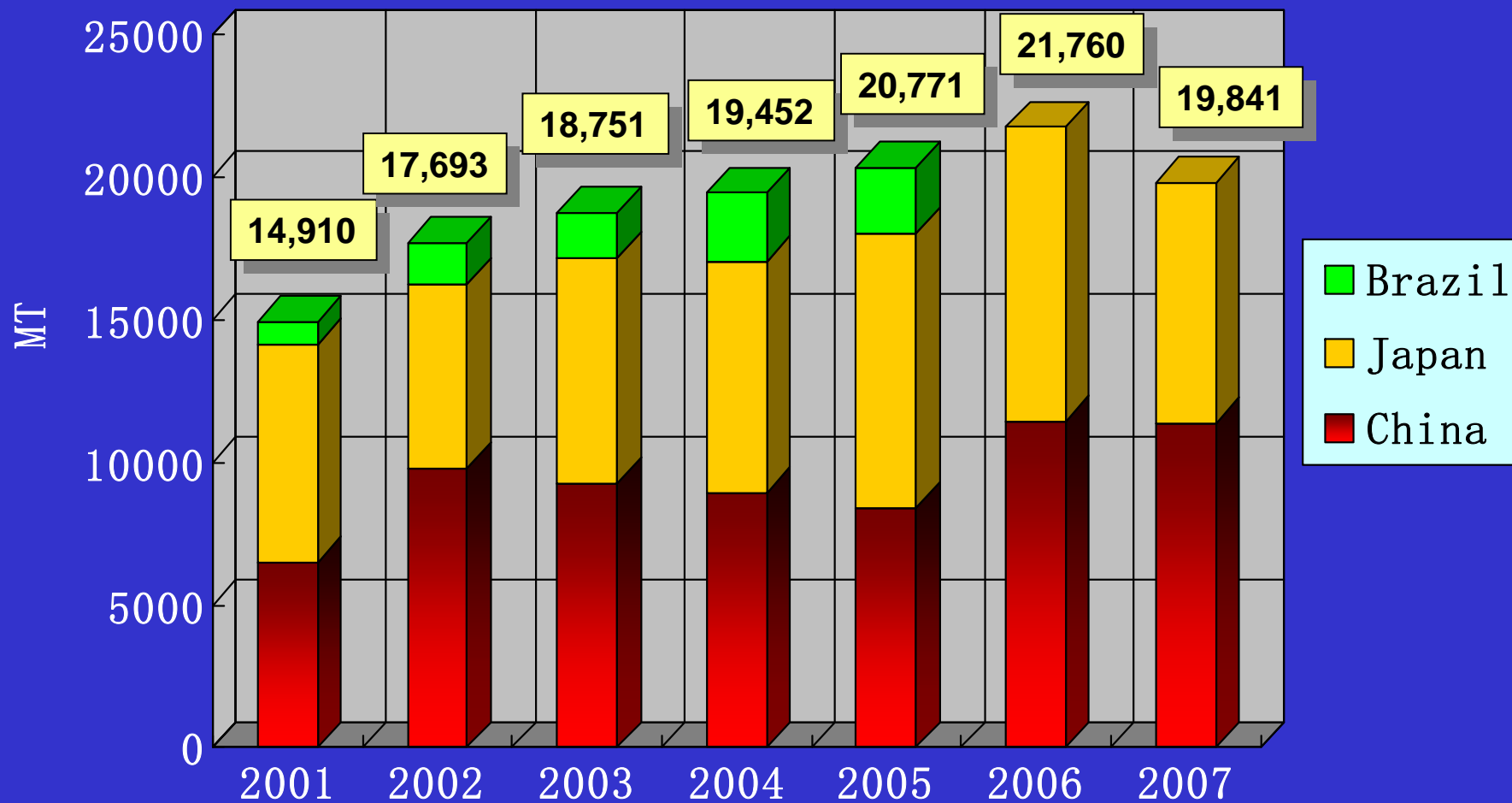
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# Japan EMD Imports by Country





# Indonesia EMD Imports by Country 2001 – 2007

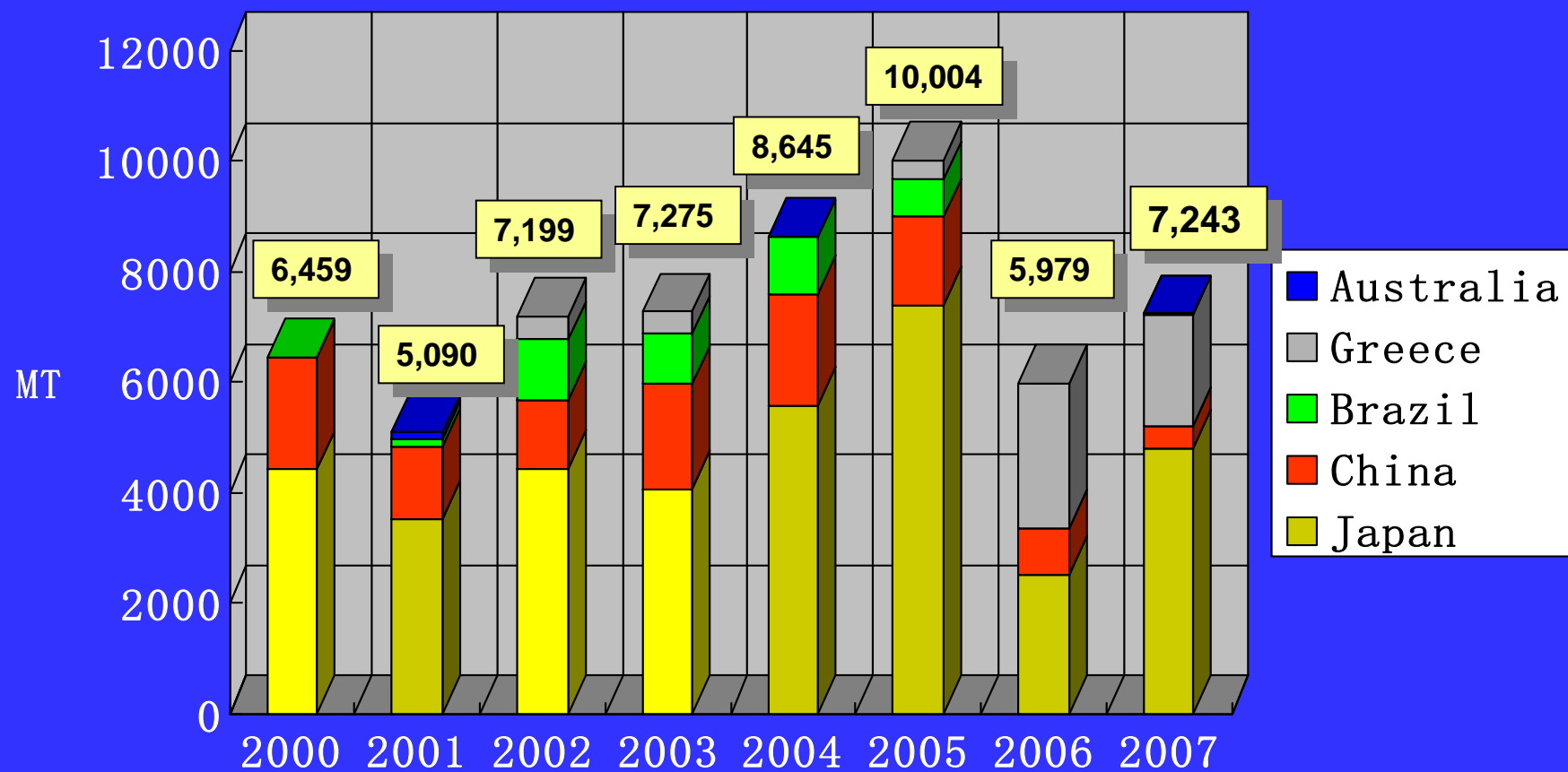


***Indonesia is the third largest EMD import country in the world.***

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# Singapore EMD Imports by Country 2000 – 2007





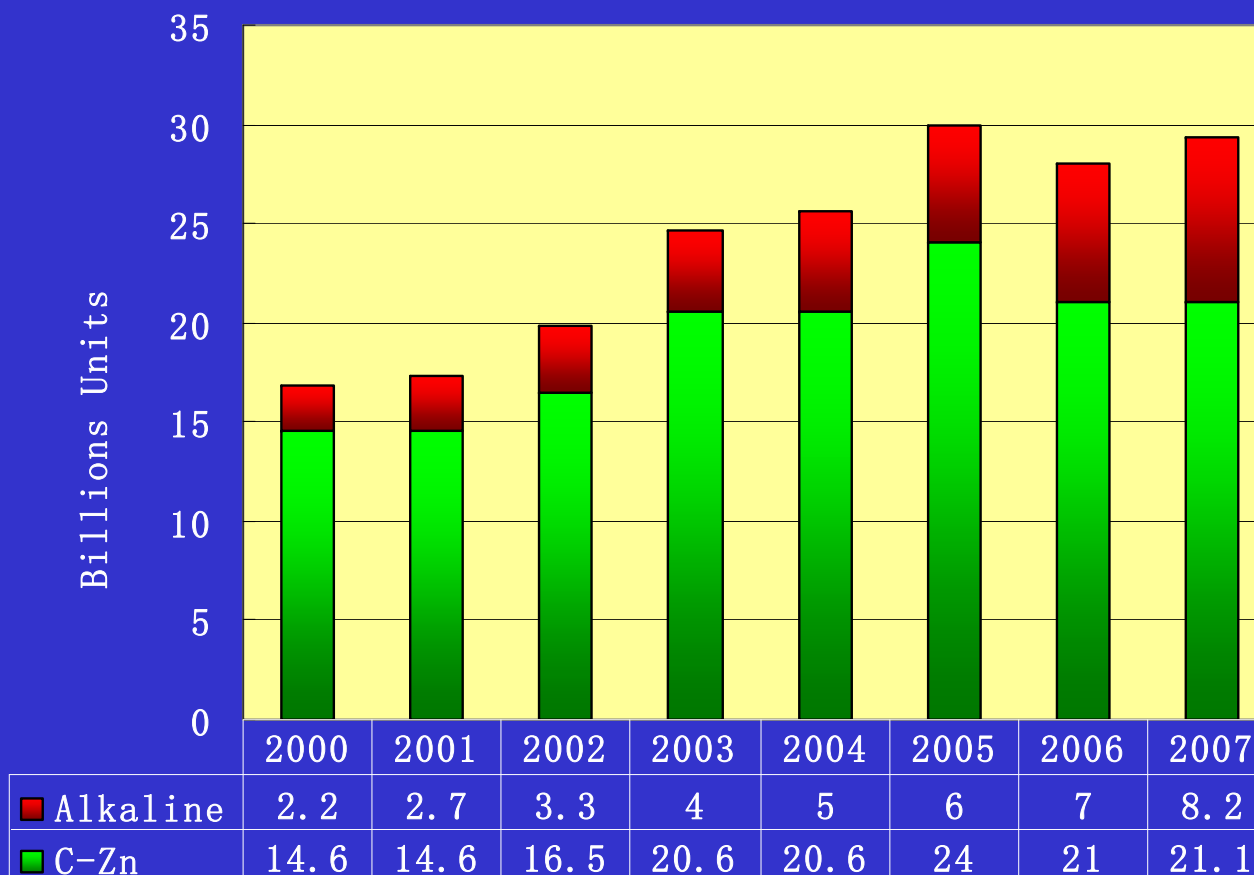
## 2007 China EMD Market Review (1)

- Recent statistic data on Dry Battery and EMD business in China. (see tables below)
- The steady growth of production and export of primary  $\text{MnO}_2$  battery have increased the demand for EMD in China year after year.



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## The Production of Primary MnO<sub>2</sub> Battery in China 2000 - 2007

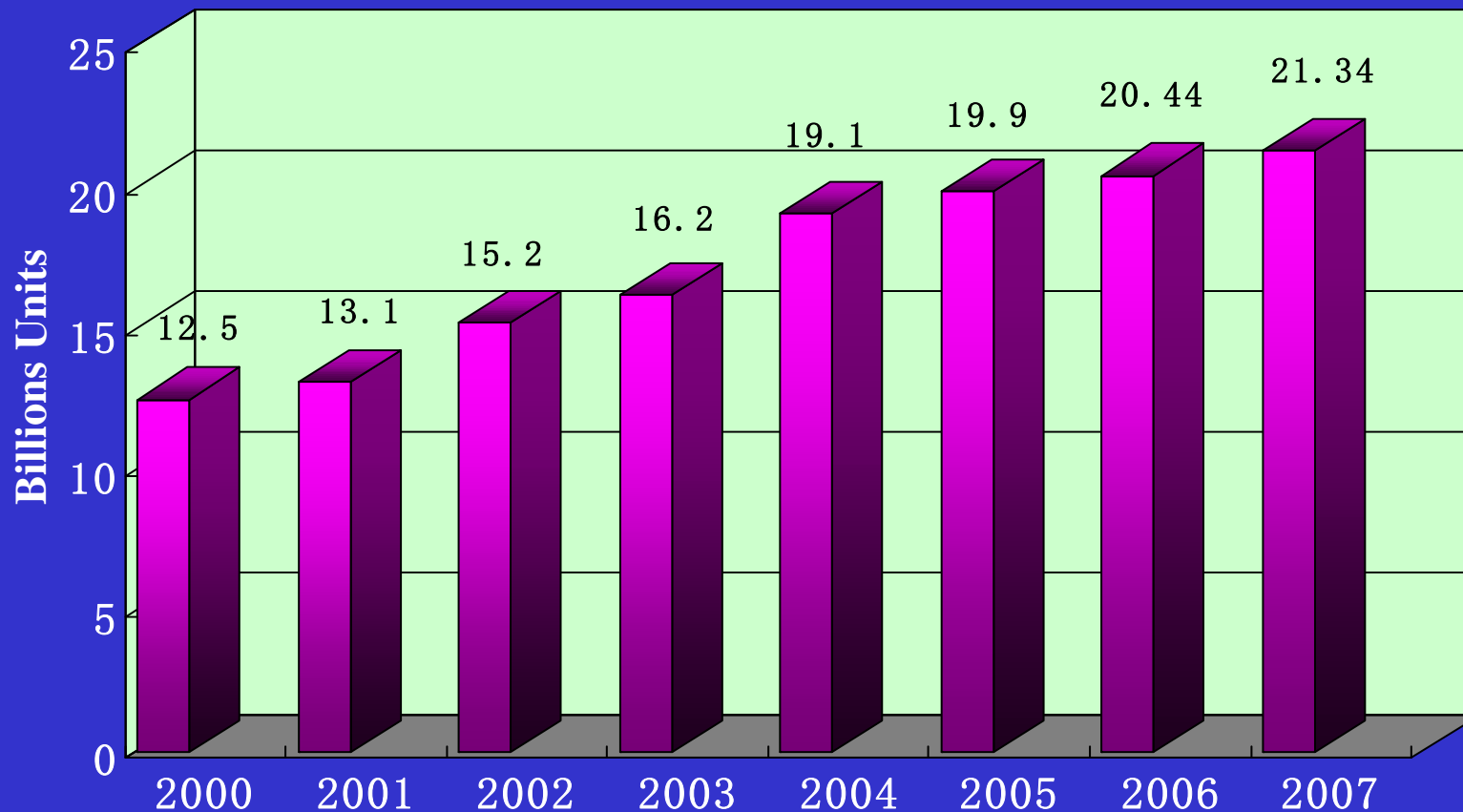


Data Source: China Battery Industry Association

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# China Exports of Primary MnO<sub>2</sub> Battery 2000-2007



Data Source: China Battery Industry Association



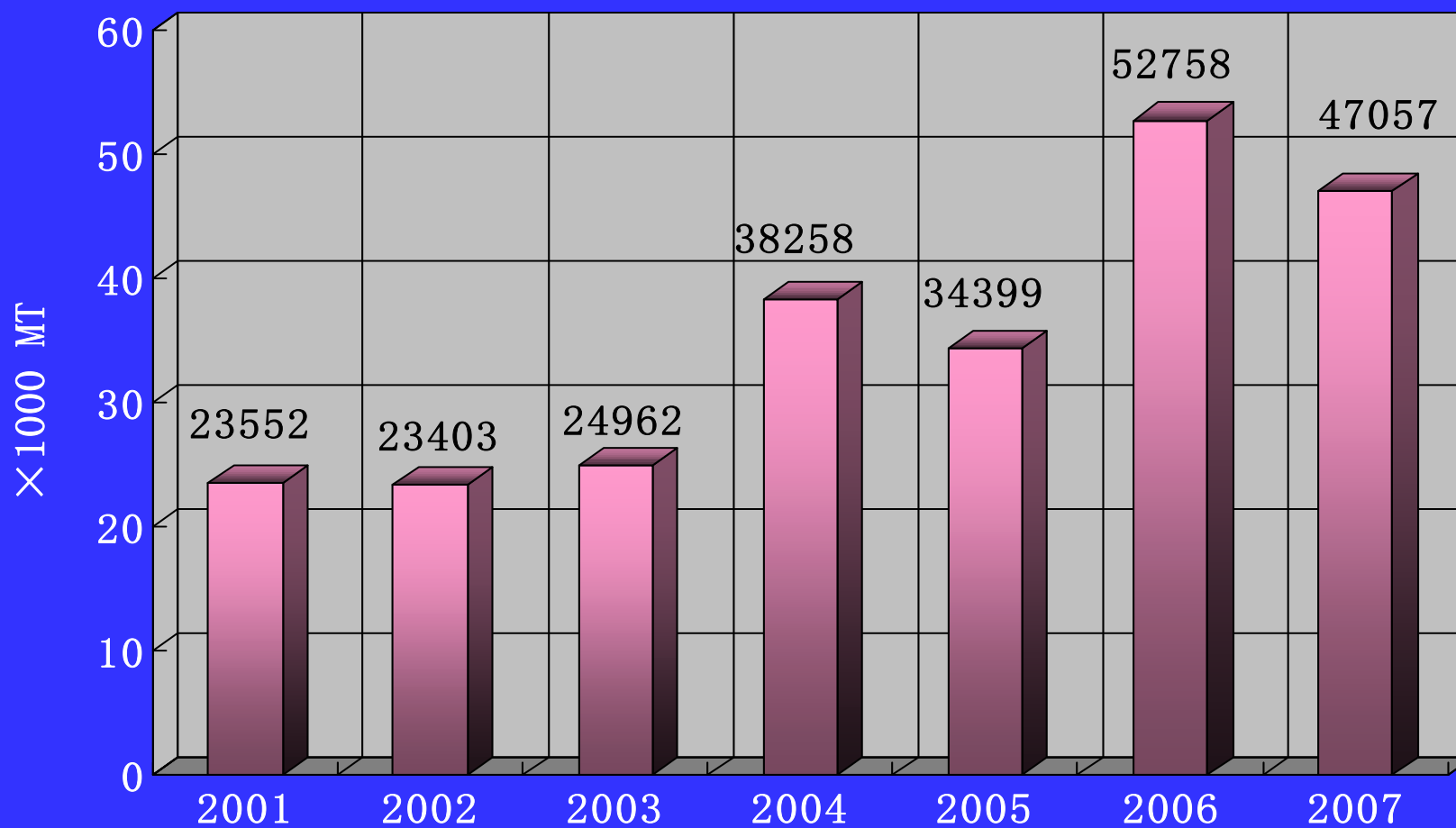
## Statistic Data of EMD Business in China 2006-2007

Items	2006	2007	Increase Rate
Producers	16	14	
Capacity (tpa)	200,000	210,000	+ 5.00%
Total Output ( t )	160,000	159,839	- 0.001%
C-Zn Grade (t)	-	78,387	
Alkaline Grade (t)	-	81,542	
Export ( t )	52,758	47,057	- 10.81%
Import ( t )	7,942	6,161	- 22.42%
Export ratio	32.97%	29.44%	- 3.53%



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## 2001-2007 China EMD Exports





## 2007 China EMD Market Review (2)

The EMD manufacturers in China experienced an hard times in 2007, and suffered one impact follows another:

- Dramatic increase in raw materials (especially Mn ore, sulfuric acid, etc.) and other inputs cost.
- The anti-dumping waves initiated by Japan, EU and US, where the main EMD consumers are located.
- The 13% tax rebate attaching to EMD exported from China have been withdrawn since 1, July, 2007.
- The continued weakening of US Dollar reduced the EMD exporters' RMB selling price.
- The tightening supply of Mn ore and oversupply market for alkaline EMD have resulted reduced operation rates.
- Most of EMD manufacturers experienced losses, and 6 EMD plants with small-scale have been shutdown during 2007.



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## Outlook: The Trends of Change (1)

- The prices for all primary raw materials continue soaring so far this year.
- The US Dollar devaluates more sharply since the beginning this year.
- The US ITA of Commerce determined preliminarily on March 20, 2008, that EMD imported from Australia and China will be subject to 120.59 % and 236.81% anti-dumping duties respectively in US, while Japan will announce to impose antidumping duties to EMD imported from Australia, China, South Africa and Spain.
- After the withdrawal of long-standing capacity from the market, The over-supplied situation of world EMD market may be partly mitigated.
- EMD prices will inevitably be increased worldwide to levels that allow EMD producers to recover cost increases and continue production with least margins.
- Nowadays, the incredible growth of electronic devices has driven the demand up for battery, and thus more EMD are needed in the future markets.



## Outlook: The Trends of Change (2)

- The leading center of EMD industry in China has shifted from Hunan to Guangxi, a province in southern China rich in manganese ore resources.
- The wide price gap between EMD and EMM (Electrolytic Manganese Metal) has driven EMD producers to consider shifting to EMM production.

Items	Unit	EMM	EMD
Mn Content	%	99.7	61
Plant Investment	%	100	300 - 400
Selling Price	RMB/MT	24,500	10,500

- In fact, some top long-standing EMD manufacturers in China are setting up their EMM plants now.



## Outlook: The Trends of Change (3)

### EMD Project in Vietnam

According to a report of Vietnam news agency, the construction of USD12,5 million EMD factory in Cao Bang province began on April 26, 2008.

The plant will have a annual EMD capacity of 10,000 MT. Most equipment and technology of the plant were transferred from Japan's Tokyo Boeki Steel and Materials Company, and 99.6% of the plant's product will be exported to Japan and European markets.

The plant is expected to be operational in the second quarter of 2009.