



2010 EMD Market Review and Forecast

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IMI's 8th EPD China Conference

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2010 Global EMD Market Review

- **Global economy in recovery; modest growth for EMD demand in 2010.**
- **Global EMD market in new shape following anti-dumping measures in US, Japan & EU:**
 - **EMD producers in US, Japan, Greece & Spain firmly dominated local market with good output and sales results. Tosoh Greece expanded annual capacity by another 4,000 MT. CEGASA Spain reached 7,000 MT in annual capacity.**
 - **Following the closure of its Australian factory, Delta shifts its major EMD market from Europe to US with significant reduction in market share.**
 - **While China continues to dominate C-Zn grade EMD market, its alkaline grade EMD gradually increases the presence in Europe, Japan and Singapore.**
 - **Quintal in Colombia starts to push its EMD into world markets in mass quantity, partly replacing Delta and China EMD which is blocked entry by anti-dumping duties.**
- **The start-up of EV development in some countries in 2010 accelerated the industrialization of LMO used as anode material for Li-ion battery, which significantly pushed up the demand for EMD. A Japanese user imported around 3,240 MT EMD from China for LMO production.**
- **Due to reduced sales, low price and strengthening Rand in 2010, Delta South Africa saw its operating profit reduced to 168 m Rand (including 133 m Rand profit from the sales of its Australian property) in 2010 from 218 m Rand in 2009,.**



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2010 Price Curve for Mn Ore Australian 44-45%

China Port RMB/mtu

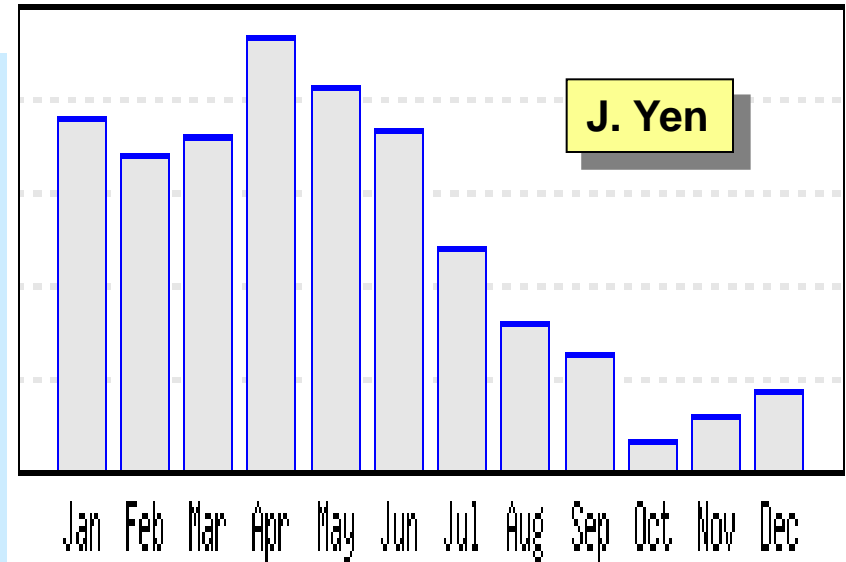
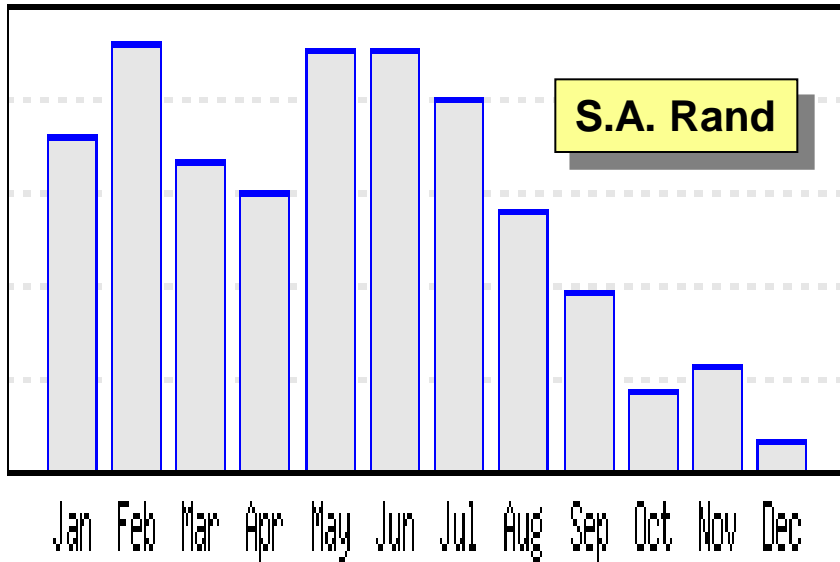
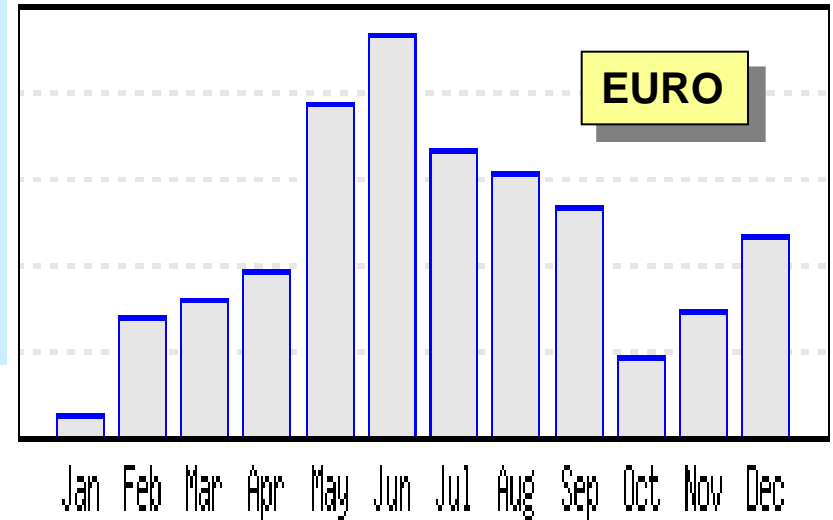
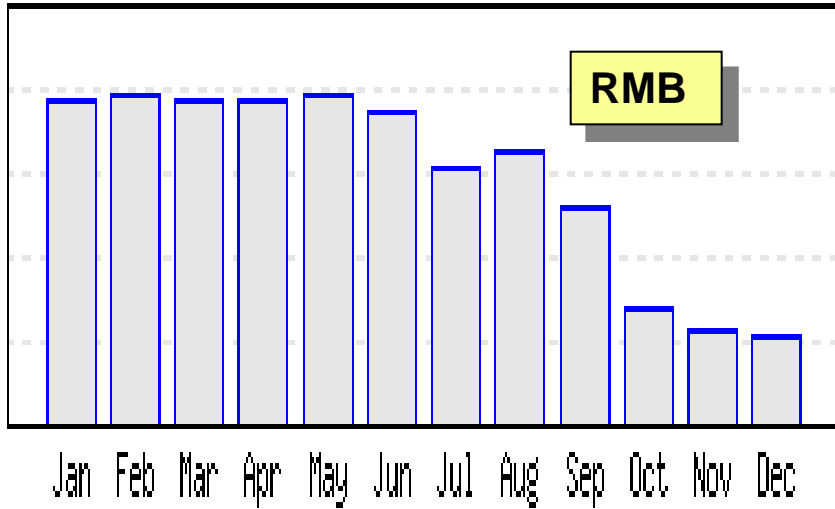
2010年1-12月中国进口锰矿价格走势图（以Mn44-45%澳块为数据标准） 全球铁合金网





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Selected Foreign Exchange Rates against US Dollar Trends in 2010





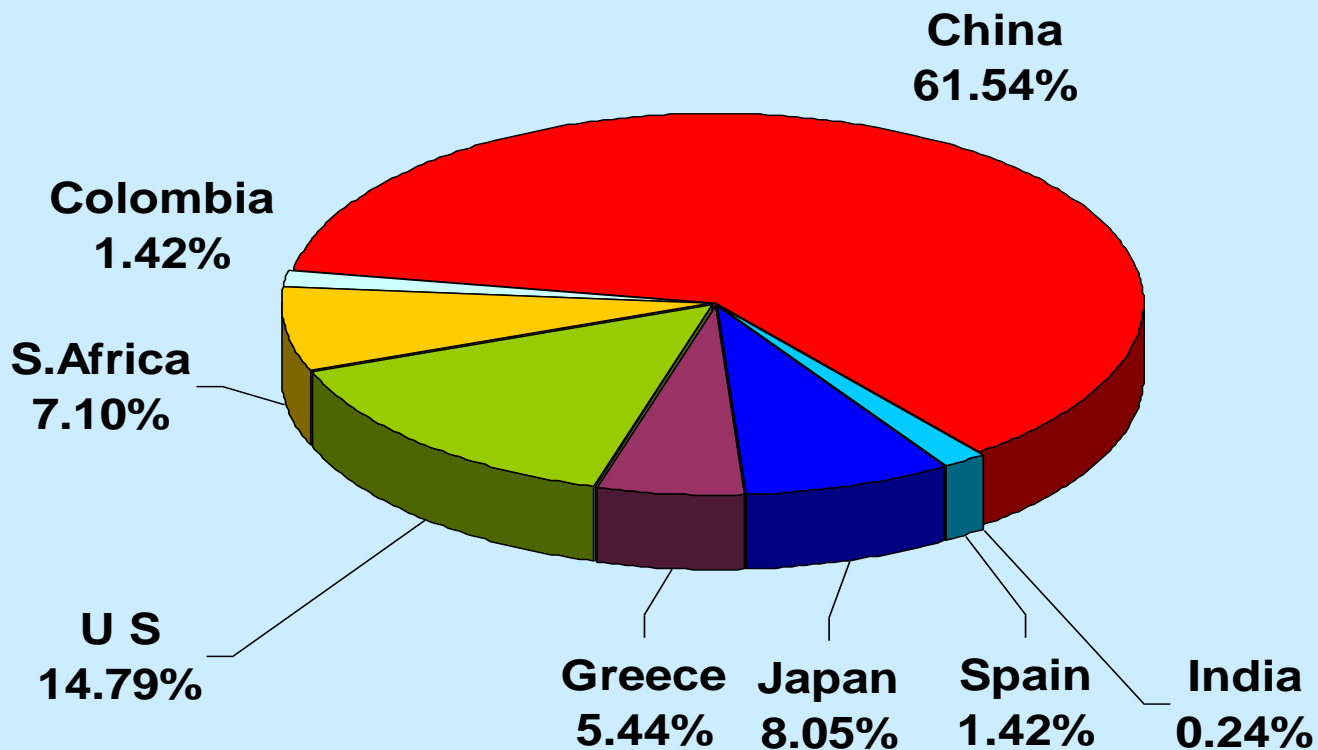
2010 World EMD Production Capacity

Country	Company	MT/Y	Country	Company	MT/Y
China	14	260,000	U S	Erachem	24,000
Japan	Tosoh	34,000	U S	Eveready	12,000
Greece	Tosoh	23,000	South Africa	Delta	30,000
Spain	Cegasa	6,000	India	Moil	1,000
U S	Tronox	26,500	Colombia	Quintal	6,000
Total Capacity: 422,500 MT/Year					



2010 World EMD Production Capacity

Total: 422,500 MT





Major EMD Exports by Country Unit: MT

Country	2006	2007	2008	2009	2010
China	52,758	47,057	38,947	38,720	47,963
Japan	29,341	24,138	20,485	15,581	18,194
Australia	24,000 ^E	26,053	12,942	-	-
South Africa	25,696	22,085	32,398	18,467	20,094
Greece	9,700 ^E	13,872	15,393	17,500 ^E	21,514
Spain	5,307	6,716	5,903	6,017	7,396
Colombia	5	110	258	585	4,899
Total	146,807	140,031	126,326	96,870	120,060

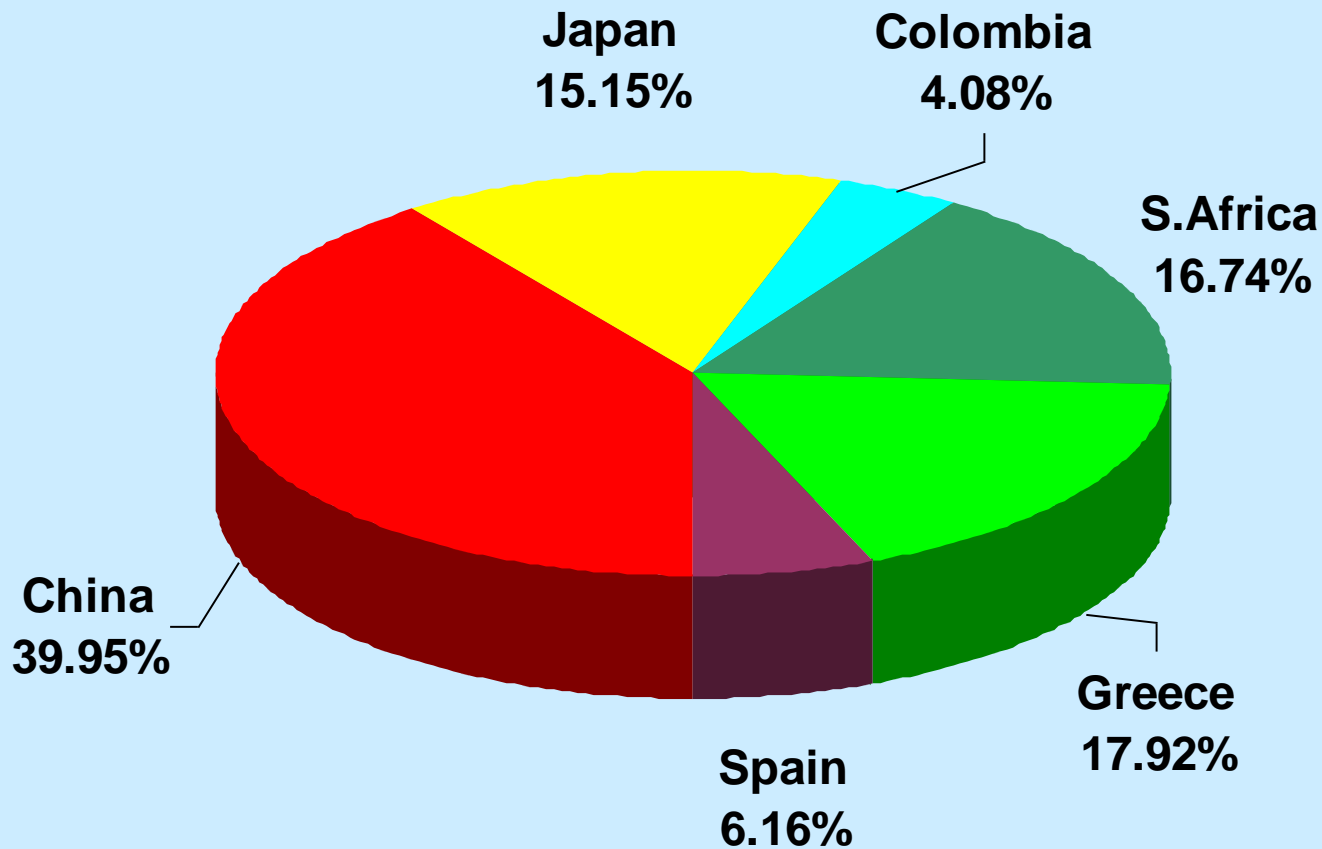
^E Estimated



2010 Major EMD Exports by Country

Unit: MT

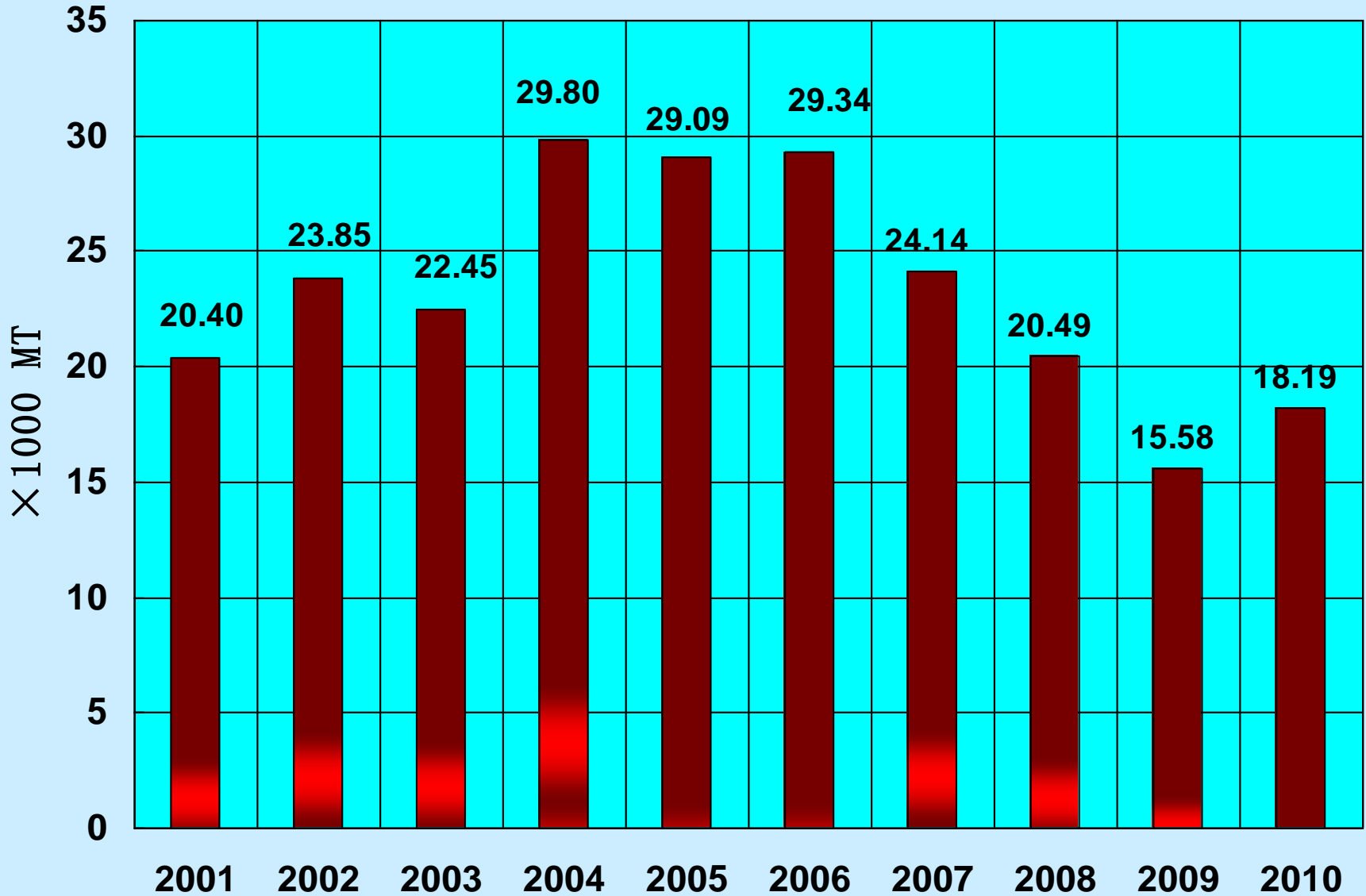
Total: 120,060 MT





2001-2010 Japan EMD exports

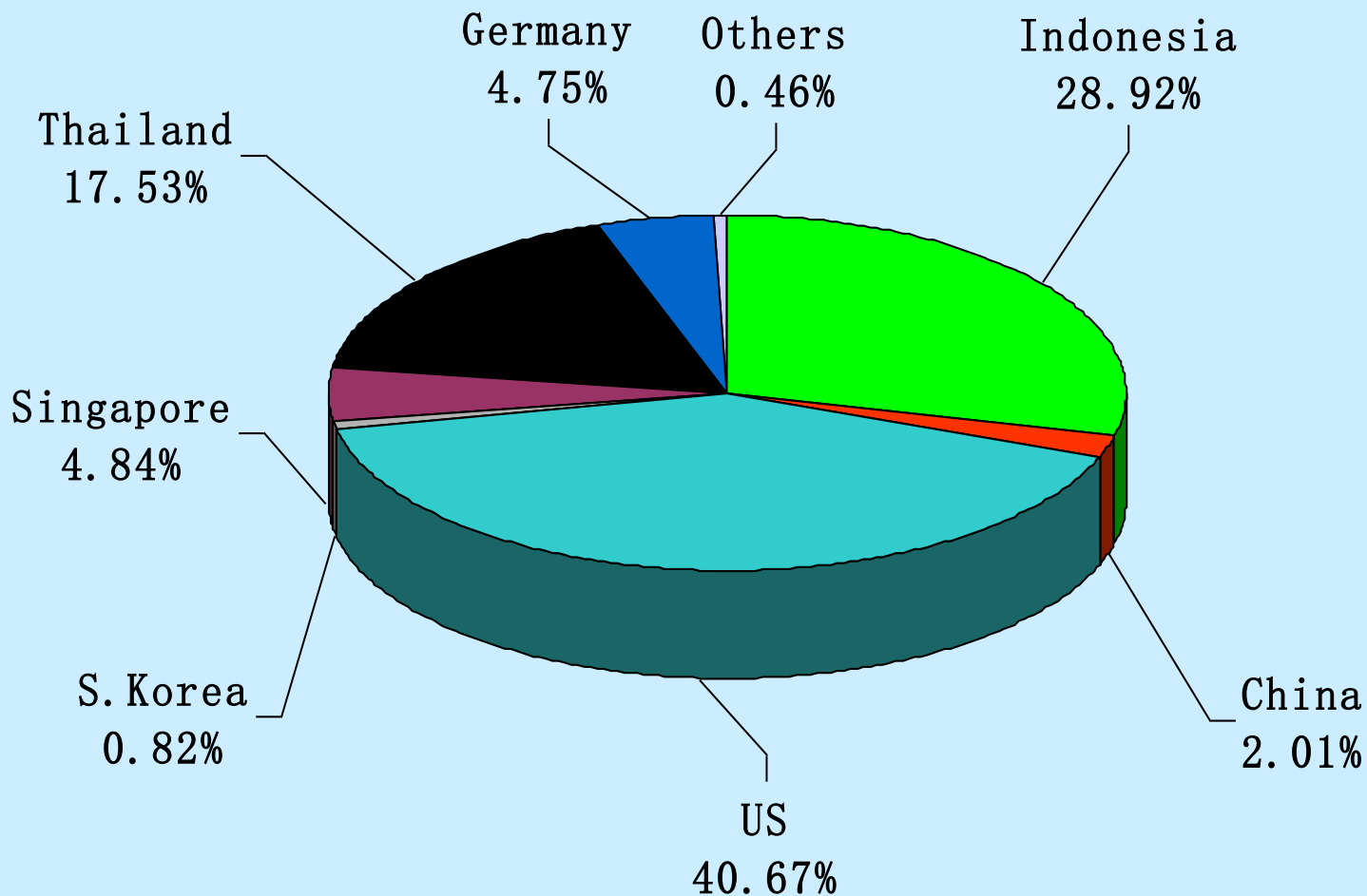
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2010 Japan EMD Exports by Country

Total:18,194 MT

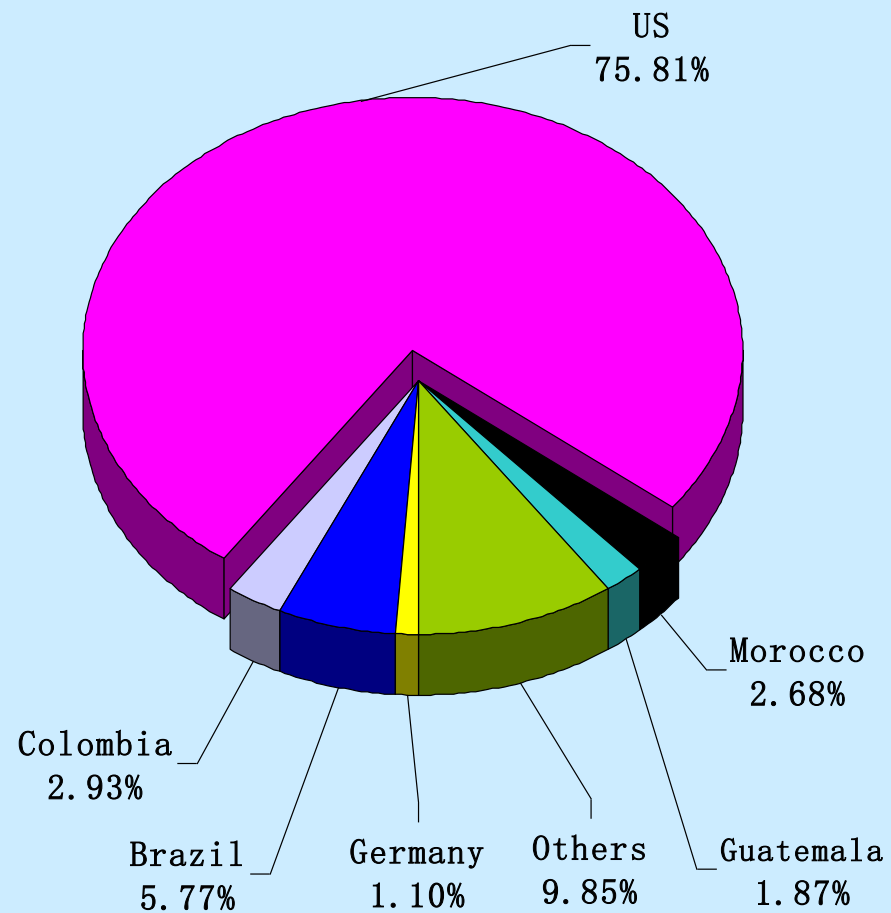
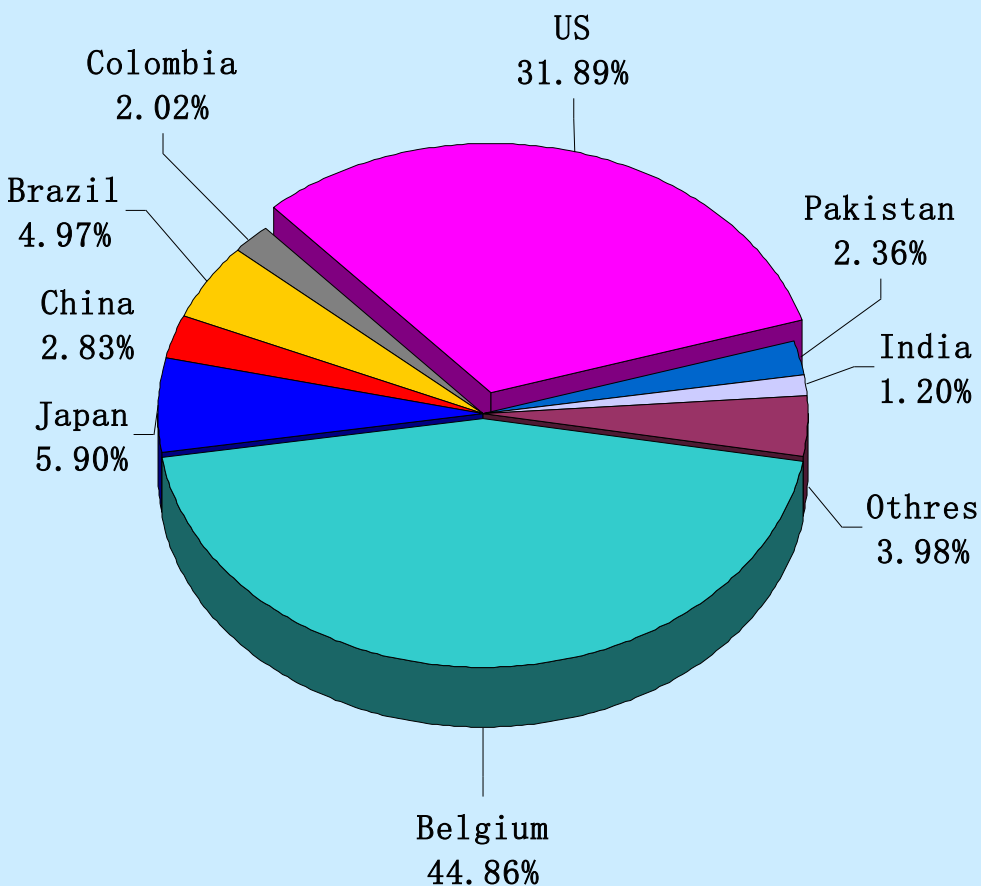




2008/2010 S. Africa EMD Exports by Country

2008 32,398 MT

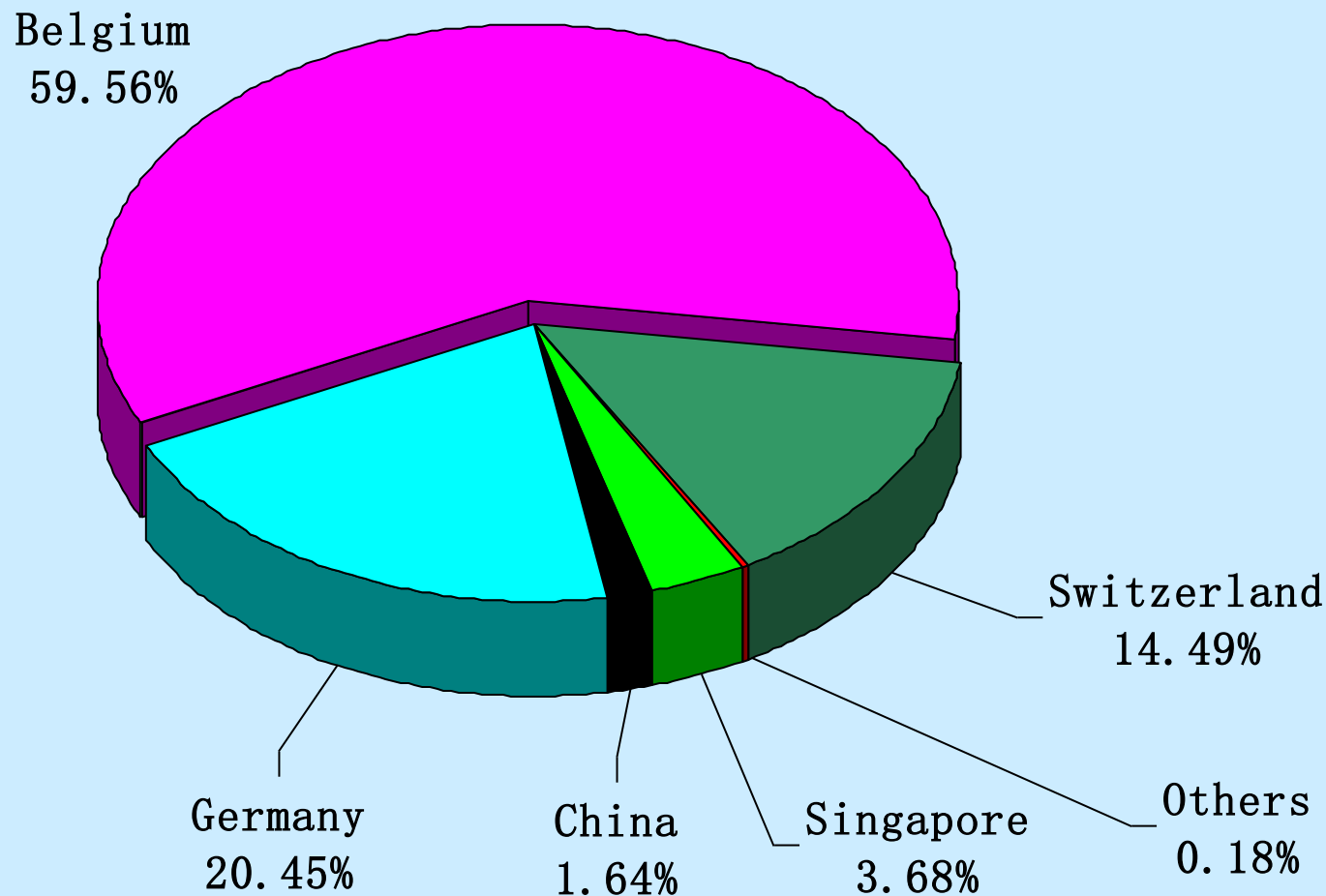
2010 20,094 MT





EMD Imports from Greece by Country

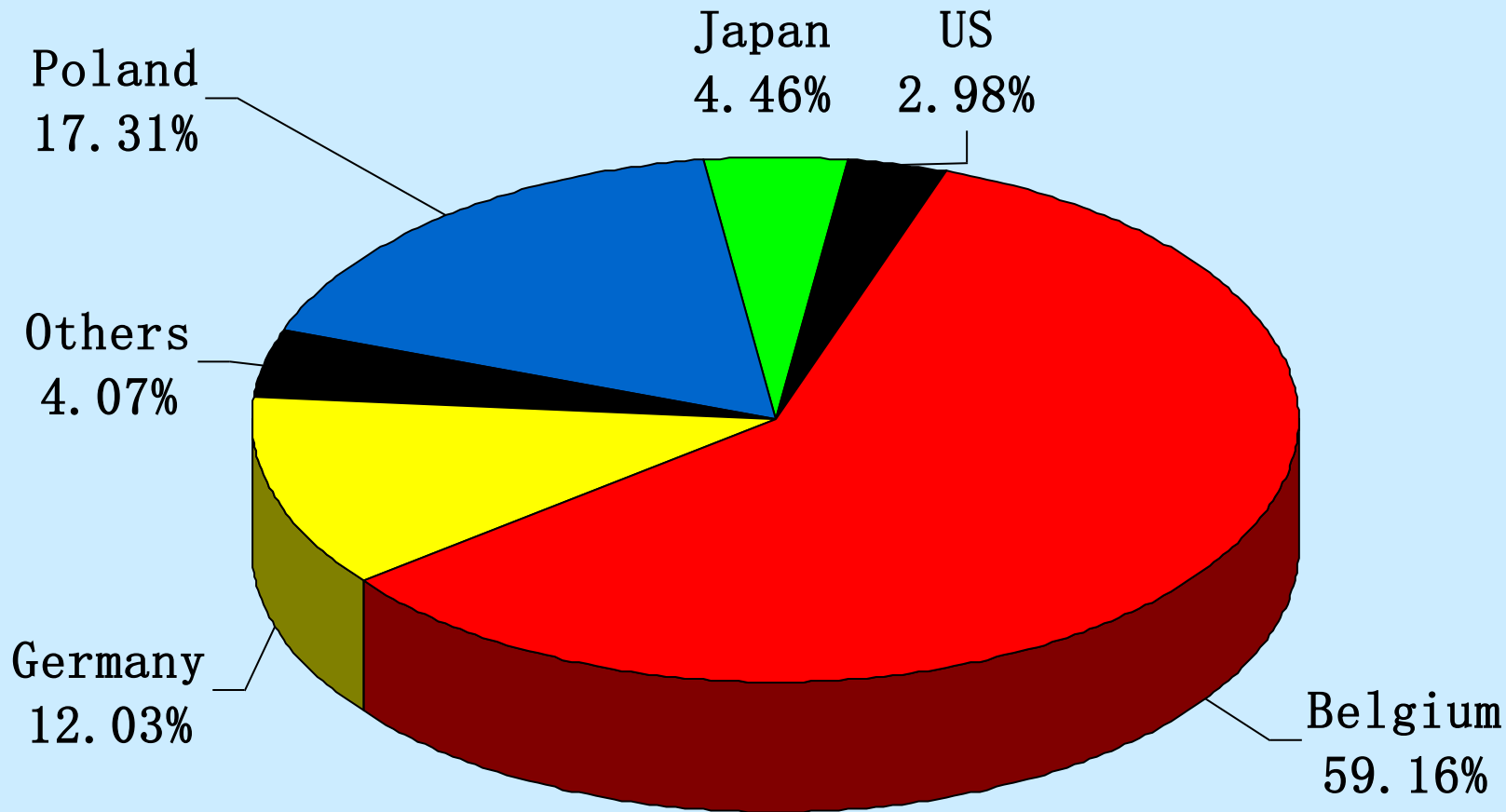
2010 Total: 21,514 MT





Spain EMD Exports by Country

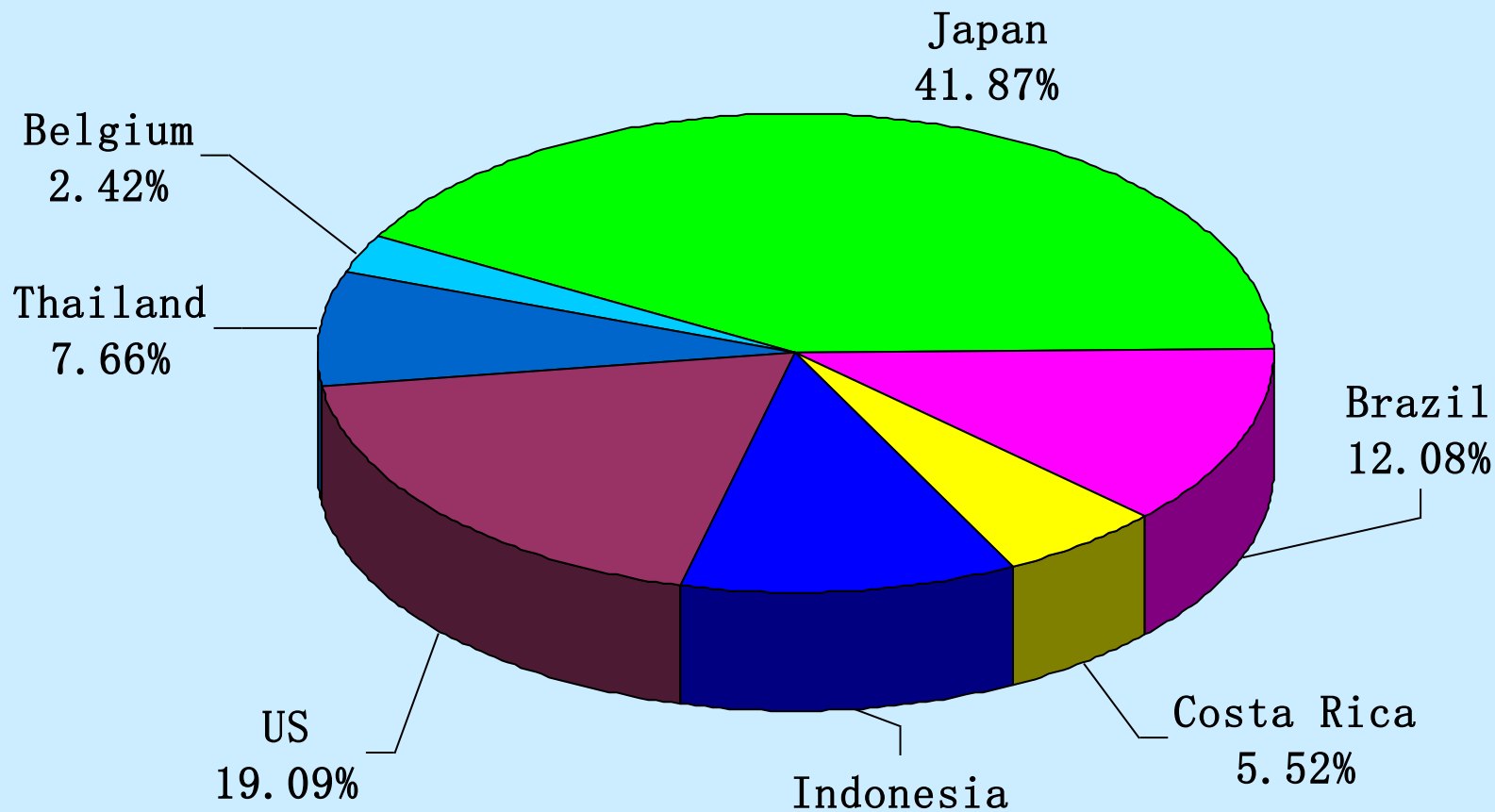
2010 Total: 7,396 MT





Colombia EMD Exports by Country

2010 Total: 4,899 MT





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2006-2010 Major EMD Imports by Country Unit: MT

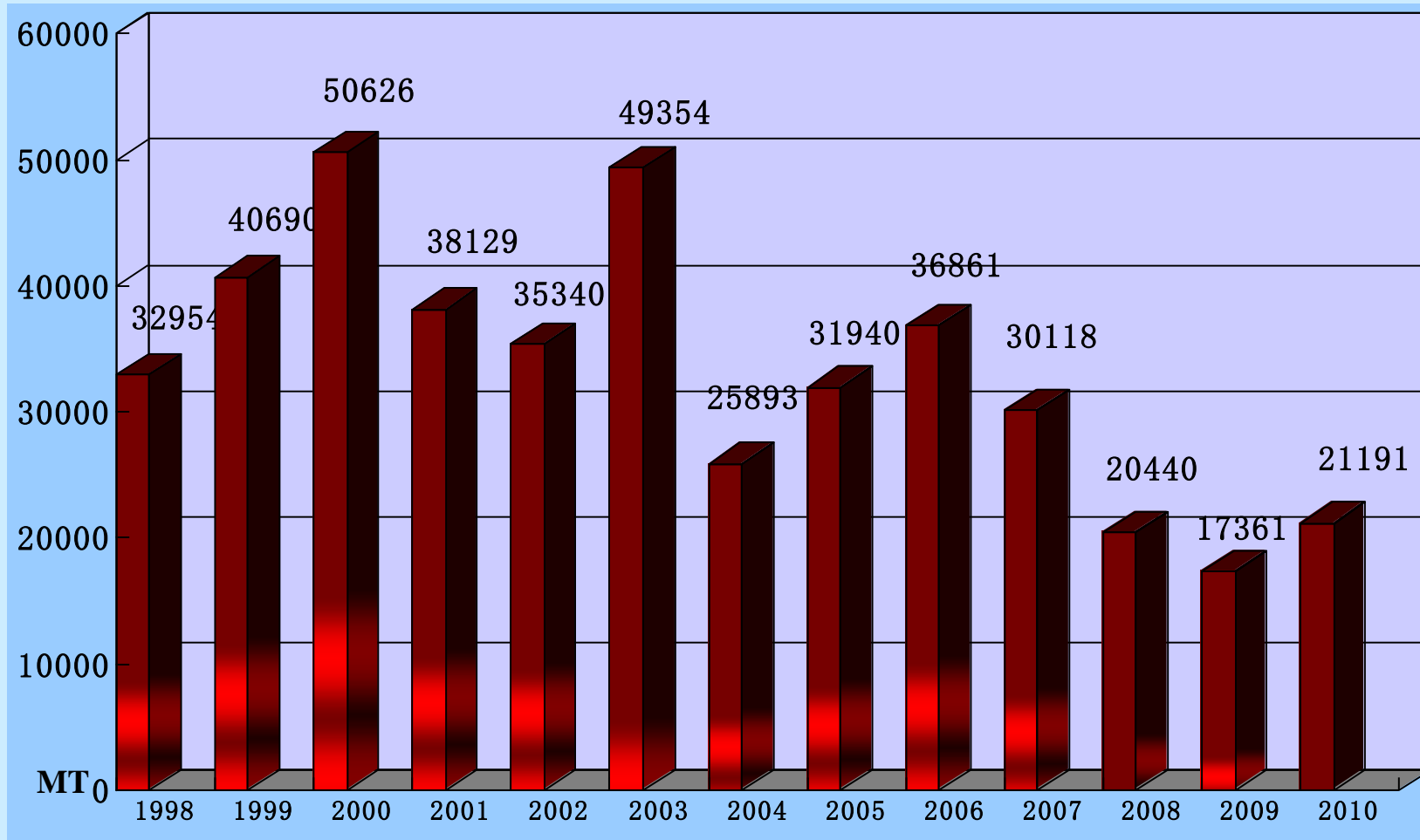
Country	2006	2007	2008	2009	2010
U S	36,861	30,118	20,440	17,361	21,191
Belgium	24,798	27,152	25,122	17,970	26,338
Indonesia	21,760	19,841	22,132	18,007	18,083
Japan	14,050	18,300	8,386	1,811	6,773
Germany	11,019	11,078	10,467	13,415	8,399
Singapore	5,742	7,243	6,269	4,139	6,000 ^E
China	7,942	6,161	2,999	1,147	1,407
India	8,966	6,730	5,129	6,703	7,611
South Korea	4,000	2,985	2,805	3,182	3,264
Switzerland	3,065	3,824	4,309	4,138	2,941
Thailand	2,981	3,451	5,376	4,929	6,085
Poland	2,146	2,763	1,883	1,480	1,482
Malaysia	934	1,788	1,500 ^E	1,200 ^E	1,100 ^E
Total	144,264	141,434	116,817	95,482	111,614

E: Estimated



1998 – 2010 US Imports of EMD

Unit: MT

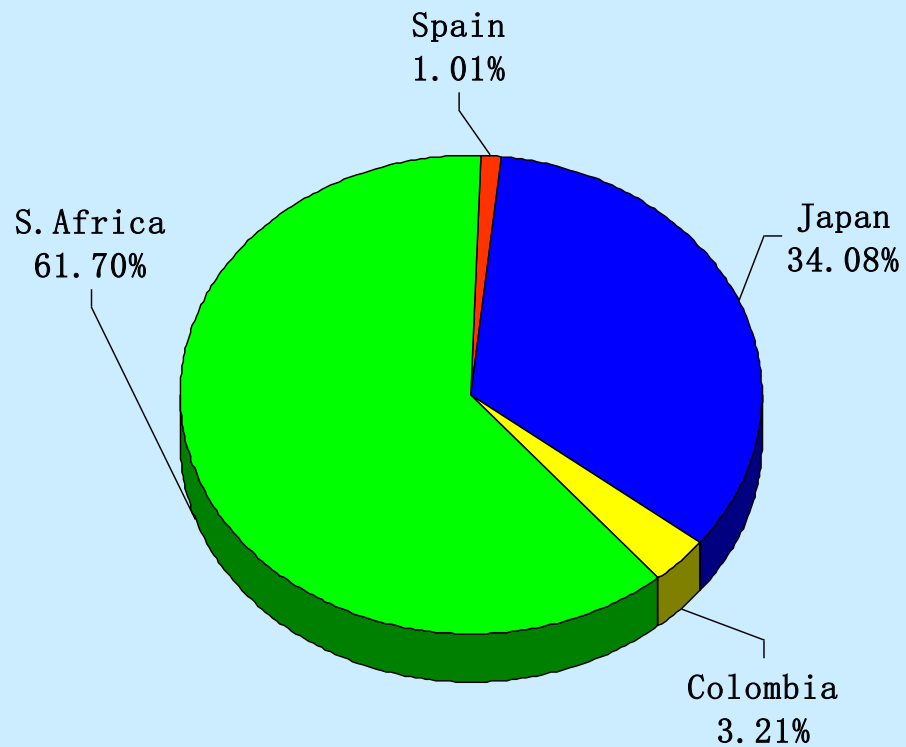
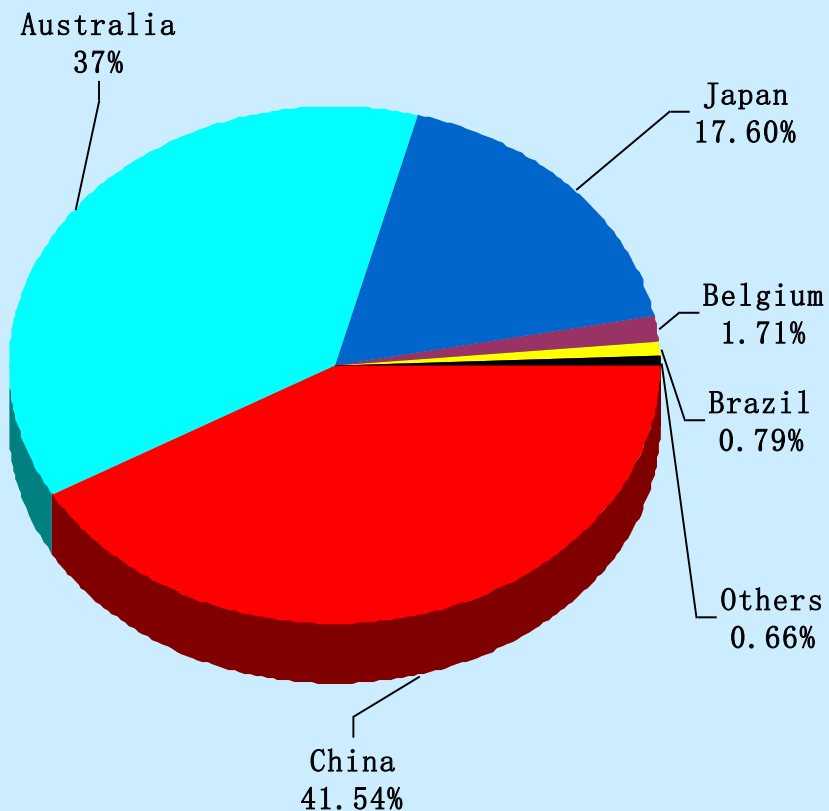




US EMD Imports by Country

2006 36,861 MT

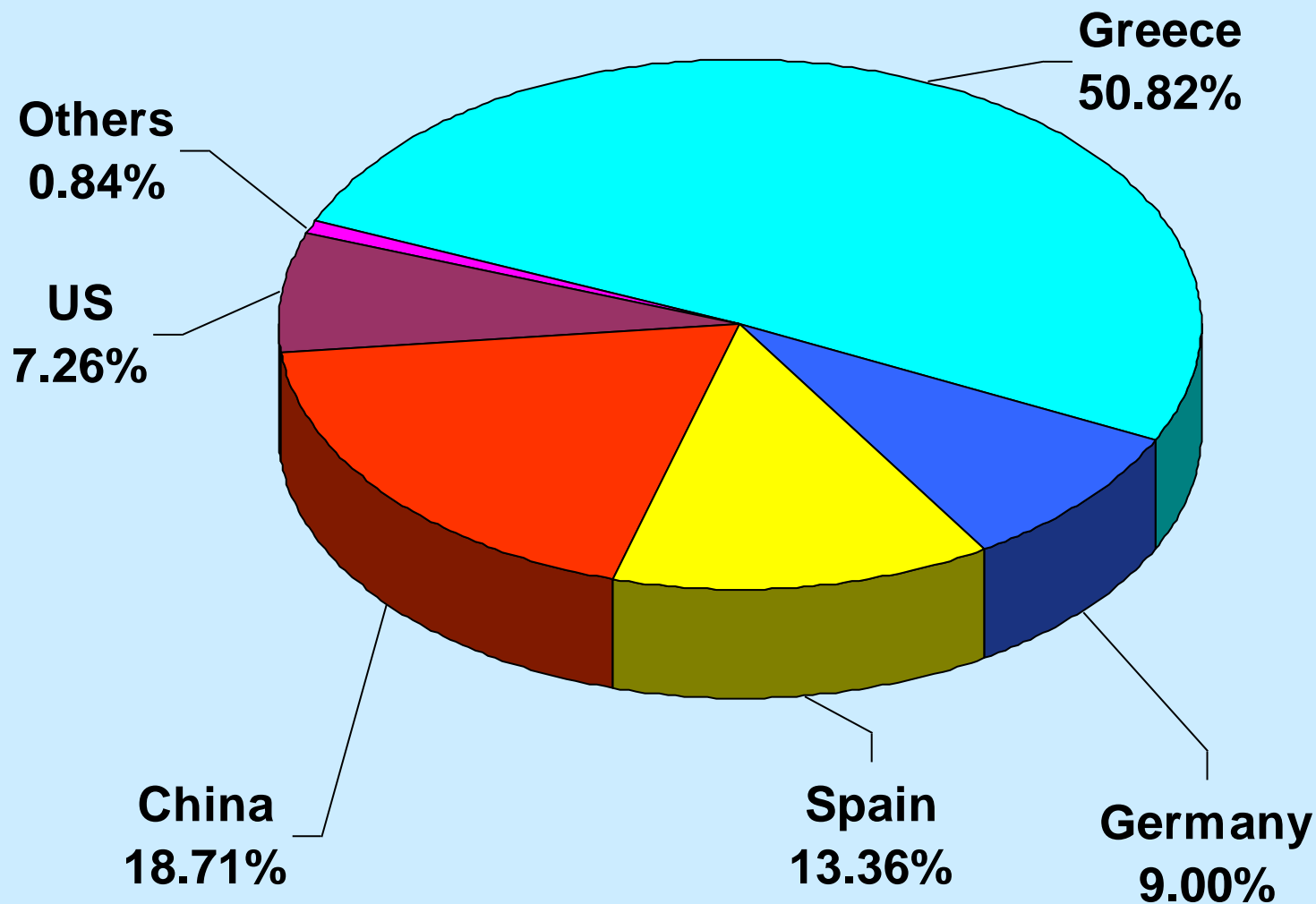
2010 21,191MT





Belgium EMD Imports by Country

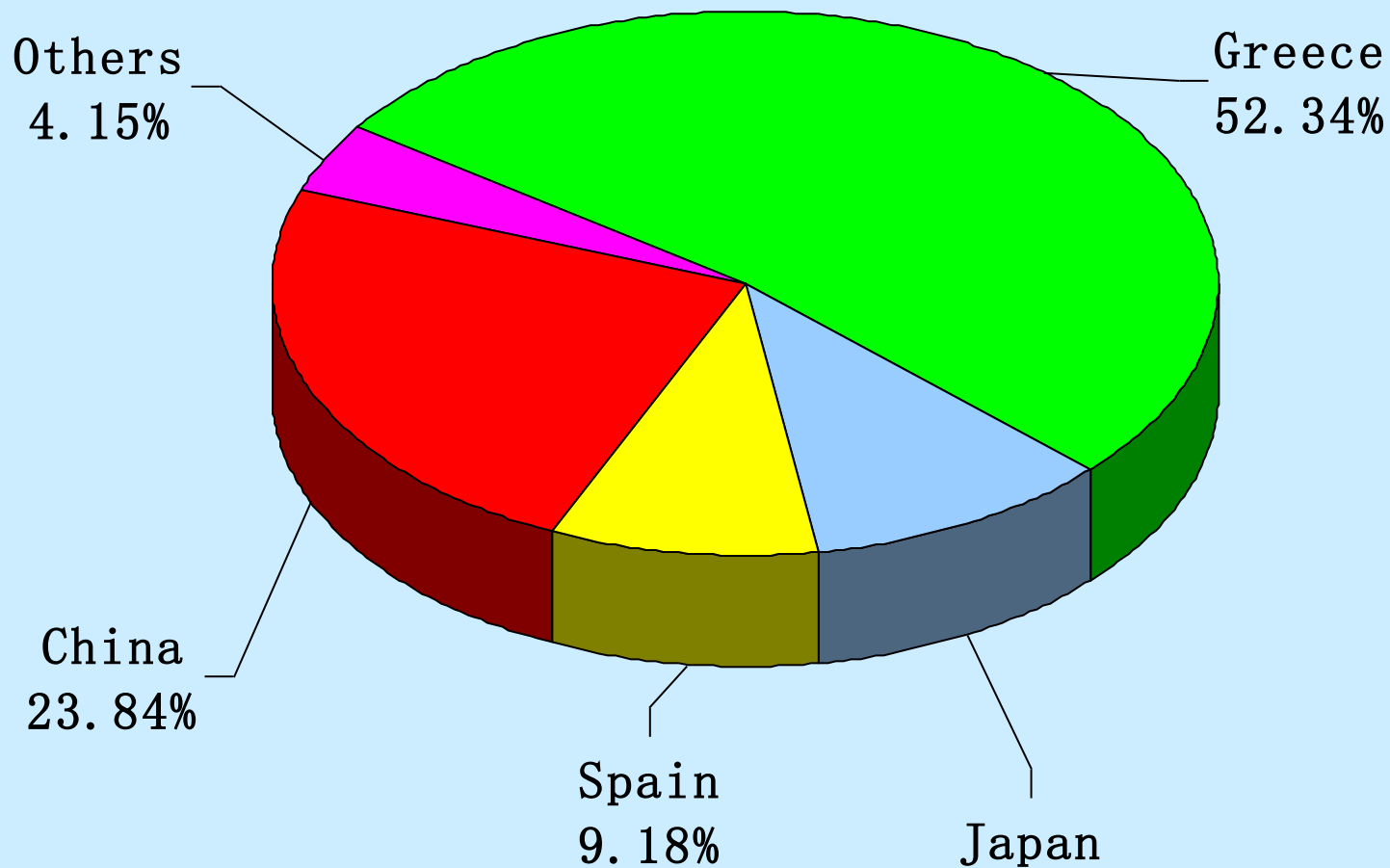
2010 Total: 26,338 MT





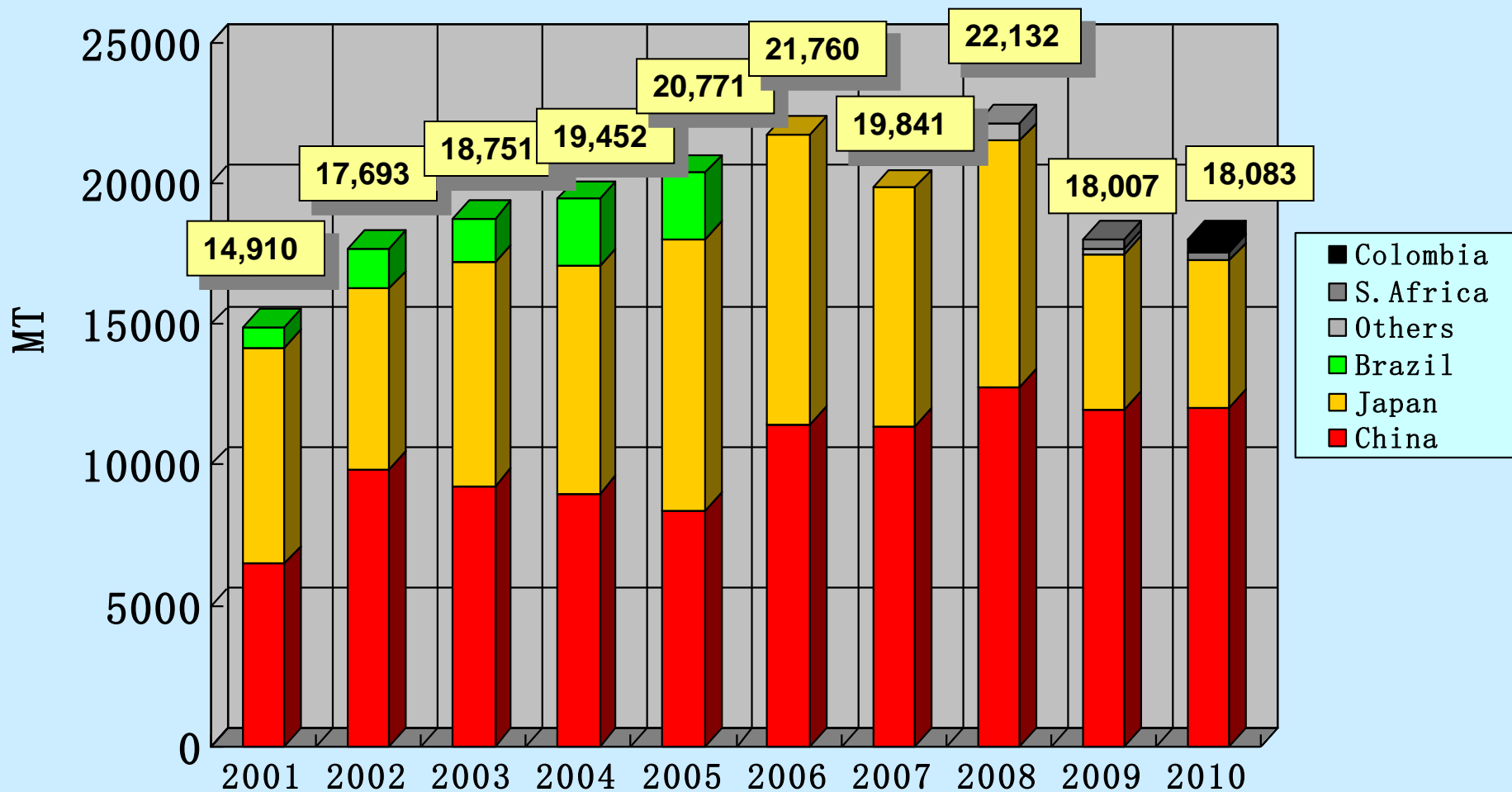
Germany EMD Imports by Country

2010 Total: 8,399 MT





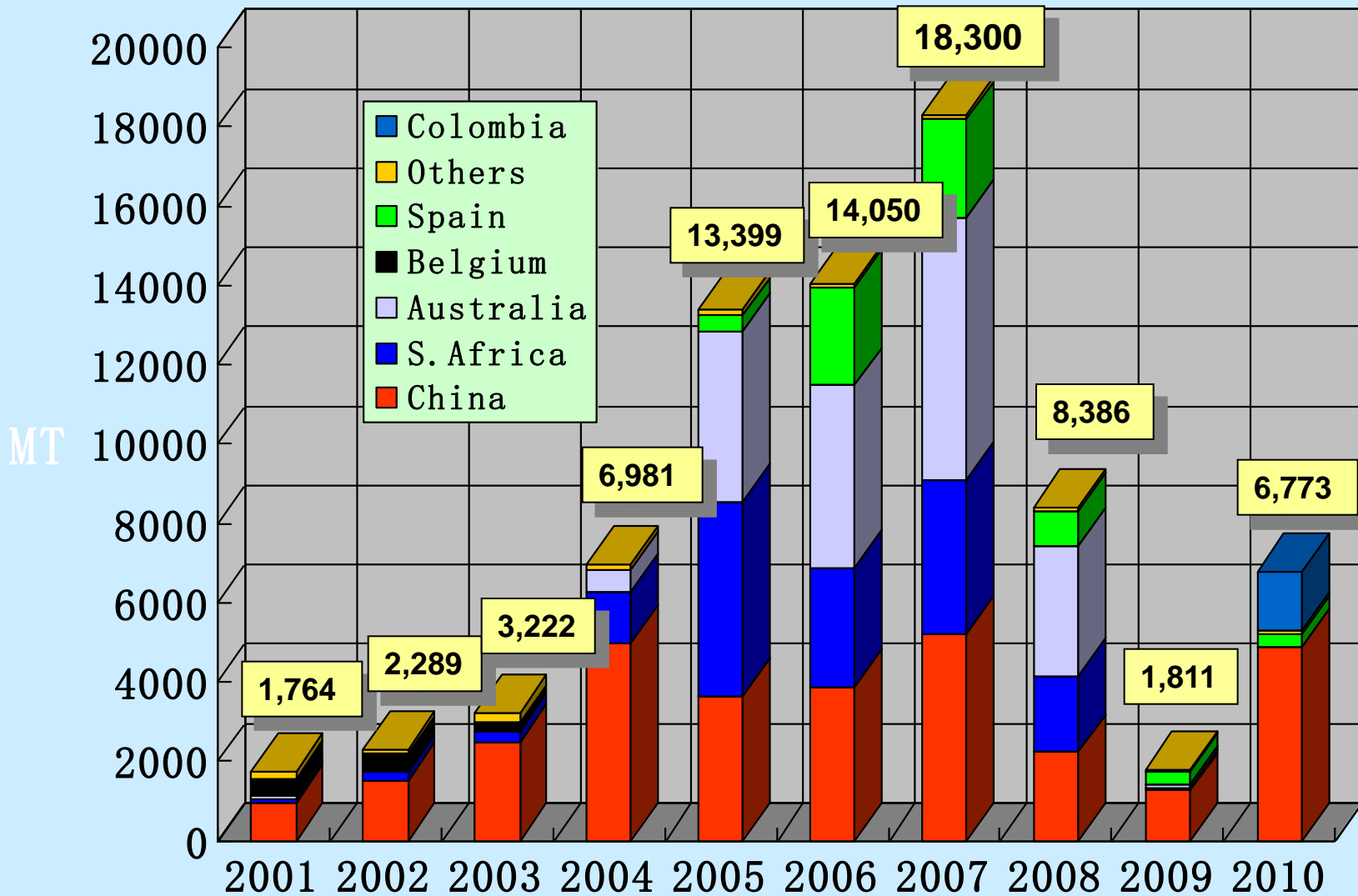
Indonesia EMD Imports by Country 2001 – 2010





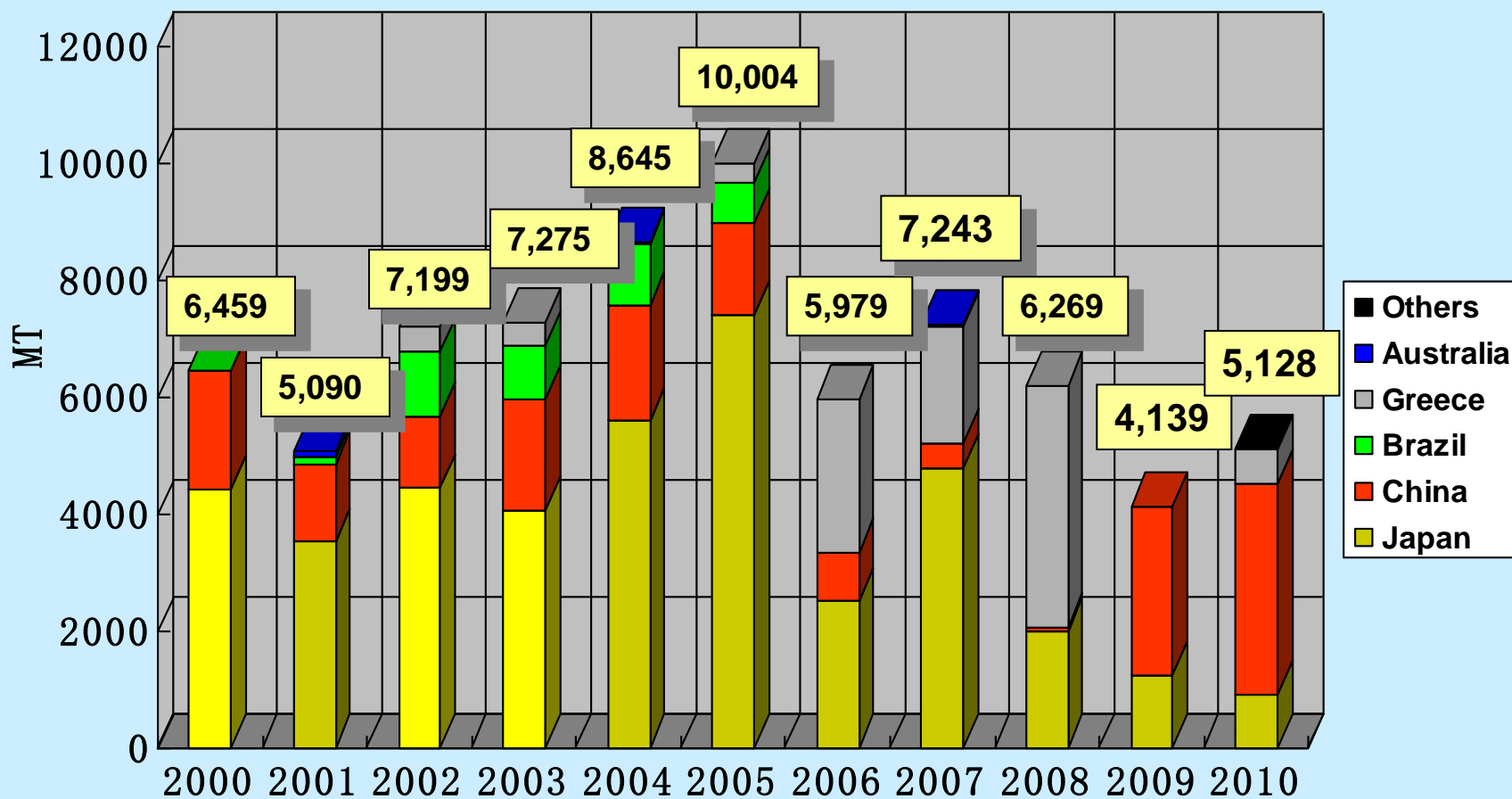
Japan EMD Imports by Country

2001 - 2010 图



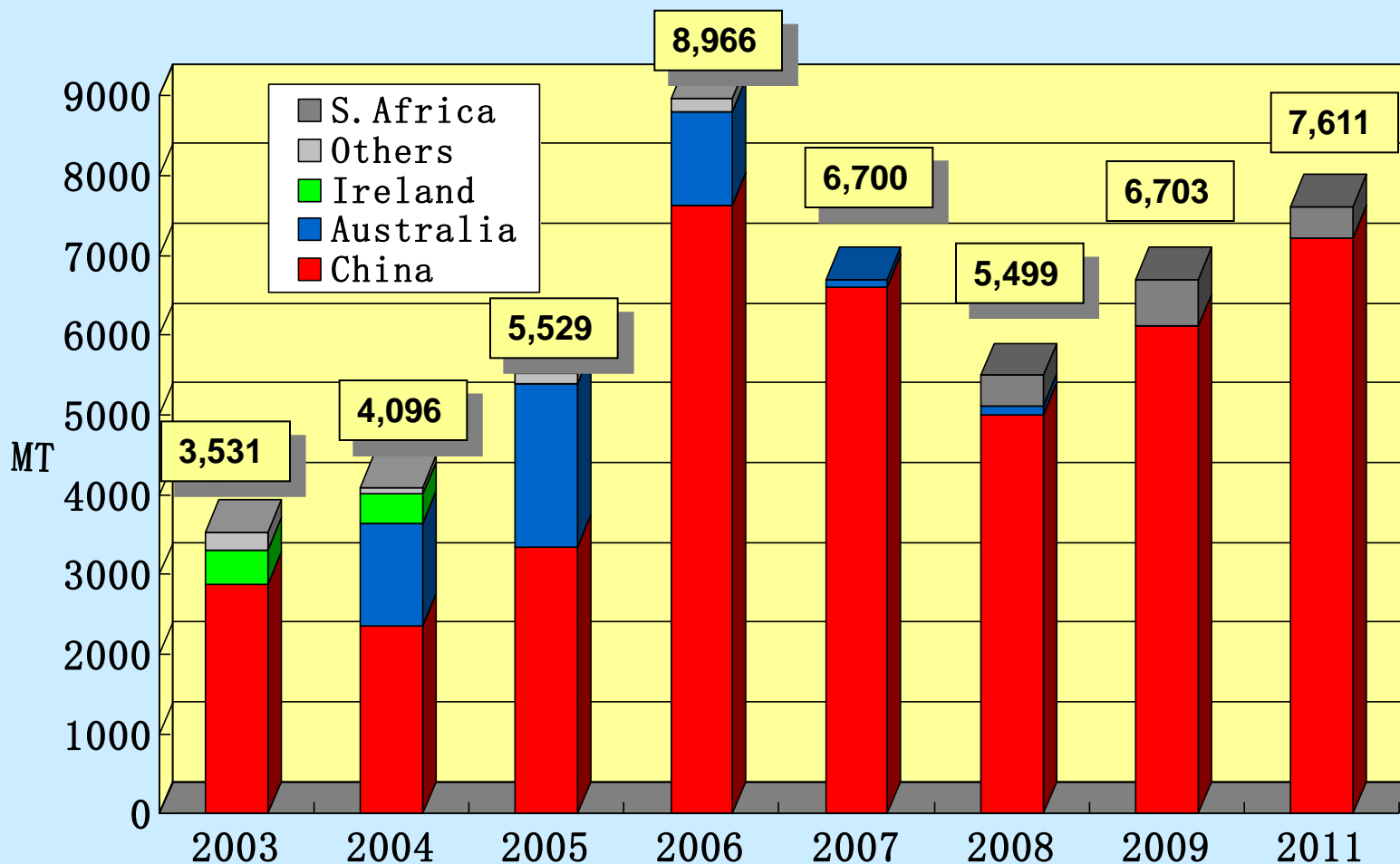


Singapore EMD Imports by Country 2000 – 2010





India EMD Imports by Country 2003 - 2010



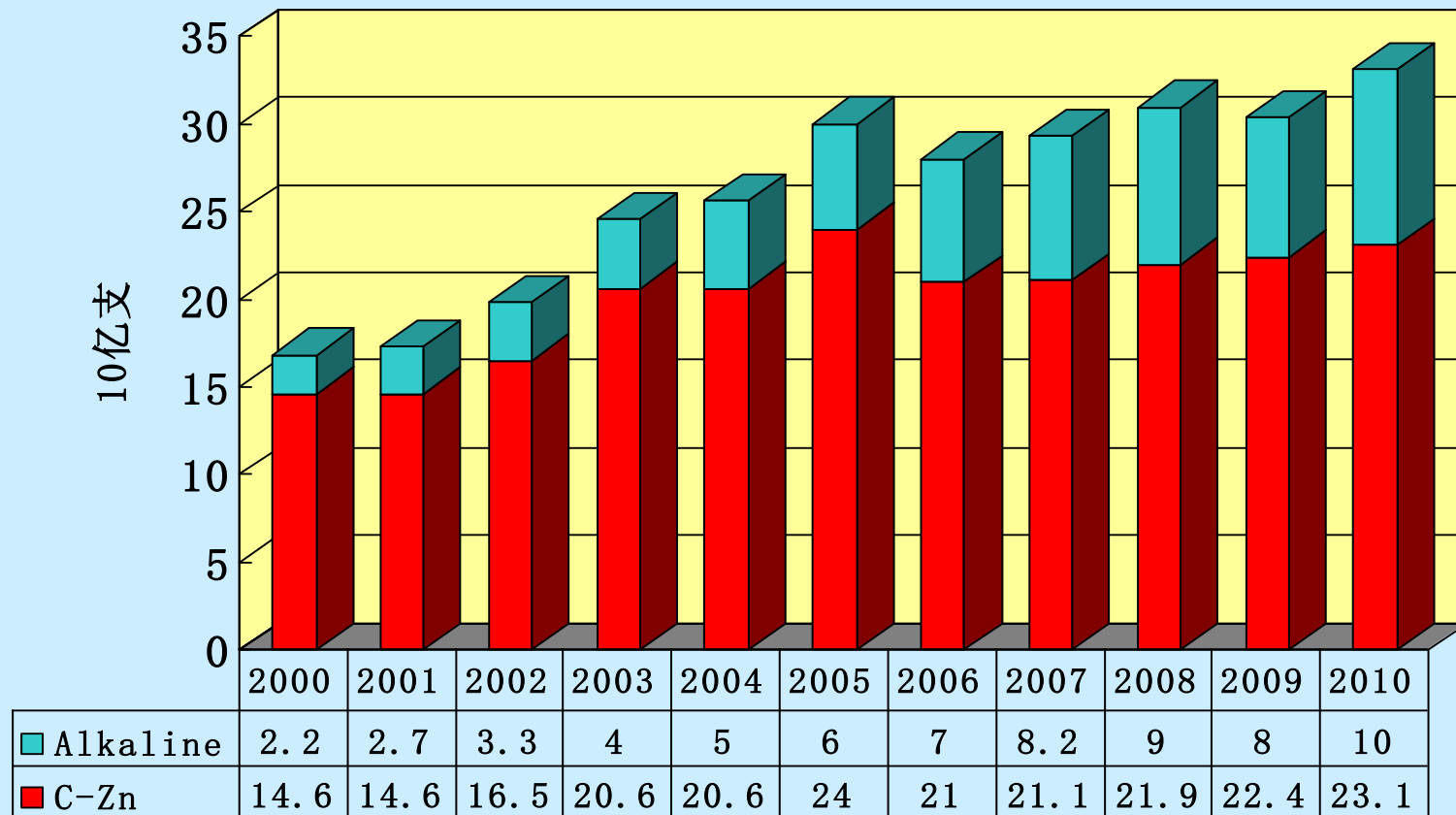


2010 China EMD Market Review

- Primary battery output in China reached 33.143 bn pieces (esteemed about 10 bn pieces for alkaline battery) in 2010 – a 10.11% increase compared with 29.042 bn pieces in 2009.
- China exported 23.504 bn pieces of primary battery in 2010, of which 5.14 bn pieces for alkaline (24.90% increase compared with 2009)
- China's Total EMD capacity in 2010 expanded to 260,000 tons, accounting for 61.54% of the global capacity, further contributing to the over-supply situation.
- China EMD output in 2010 reached record high of 202000 tons (11.28% increase compared with 2009) with matching sales volume, supporting the development of China primary battery industry as the largest one in the world.
- Thanks to global economic recovery in 2010, China EMD export increased by 23.87% compared with 2009 and reached 49,700 MT which accounts for 23.87% of the total sales with a merely 1407 MT of import. But China EMD prices remains low in global market.
- In 2010, around 15,000 MT EMD in China was used as anode material for both primary and secondary Li battery. This application is increasingly expanding with EMD producers in China engaging in R&D in this field.
- Basic statistics of China EMD market in 2010 shown in the following chart.



The Production of Primary MnO₂ Battery in China 2000 - 2009

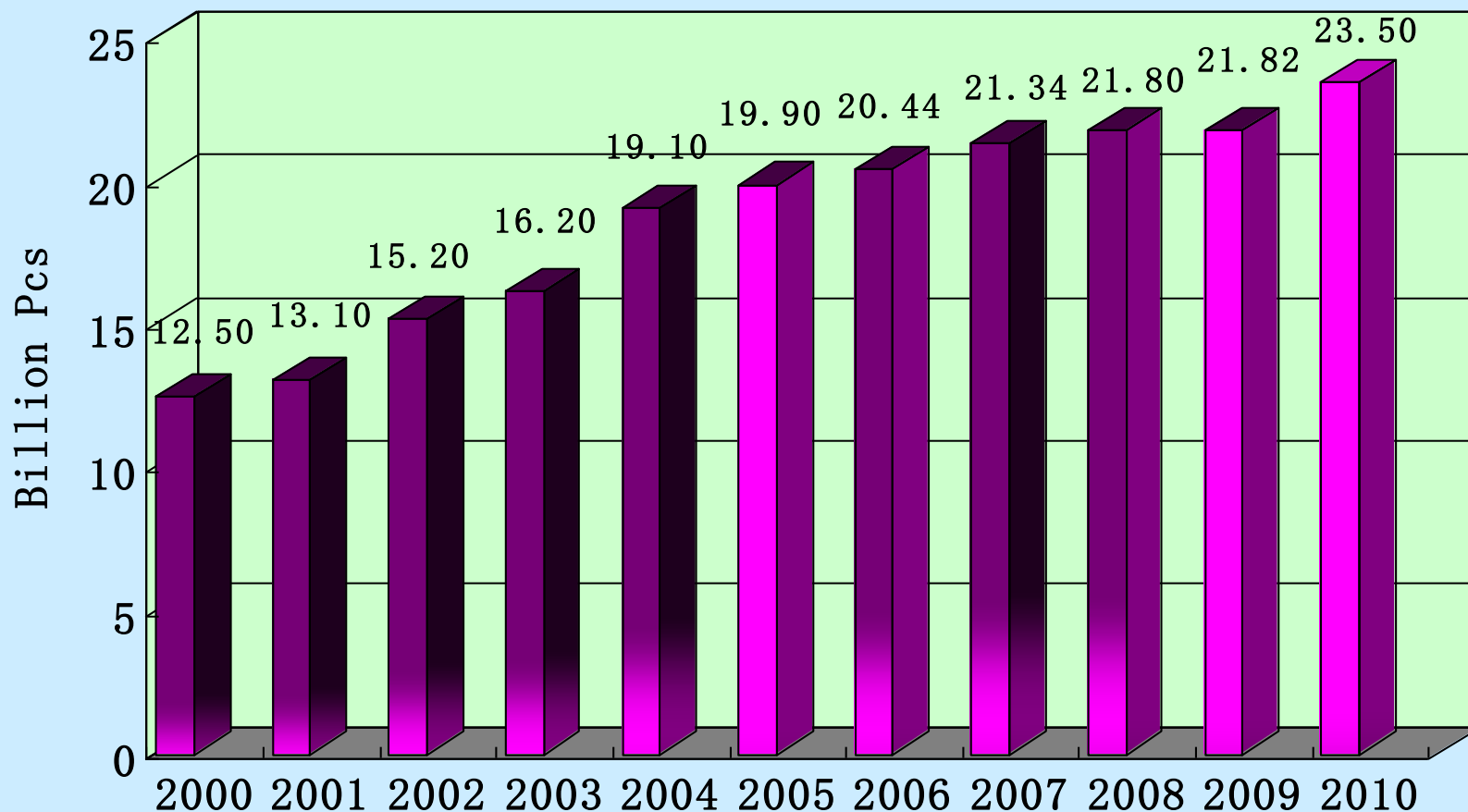


Data Source: China Battery Industry Association



China Exports of Primary MnO₂ Battery

2000-2010



Data Source: China Battery Industry Association

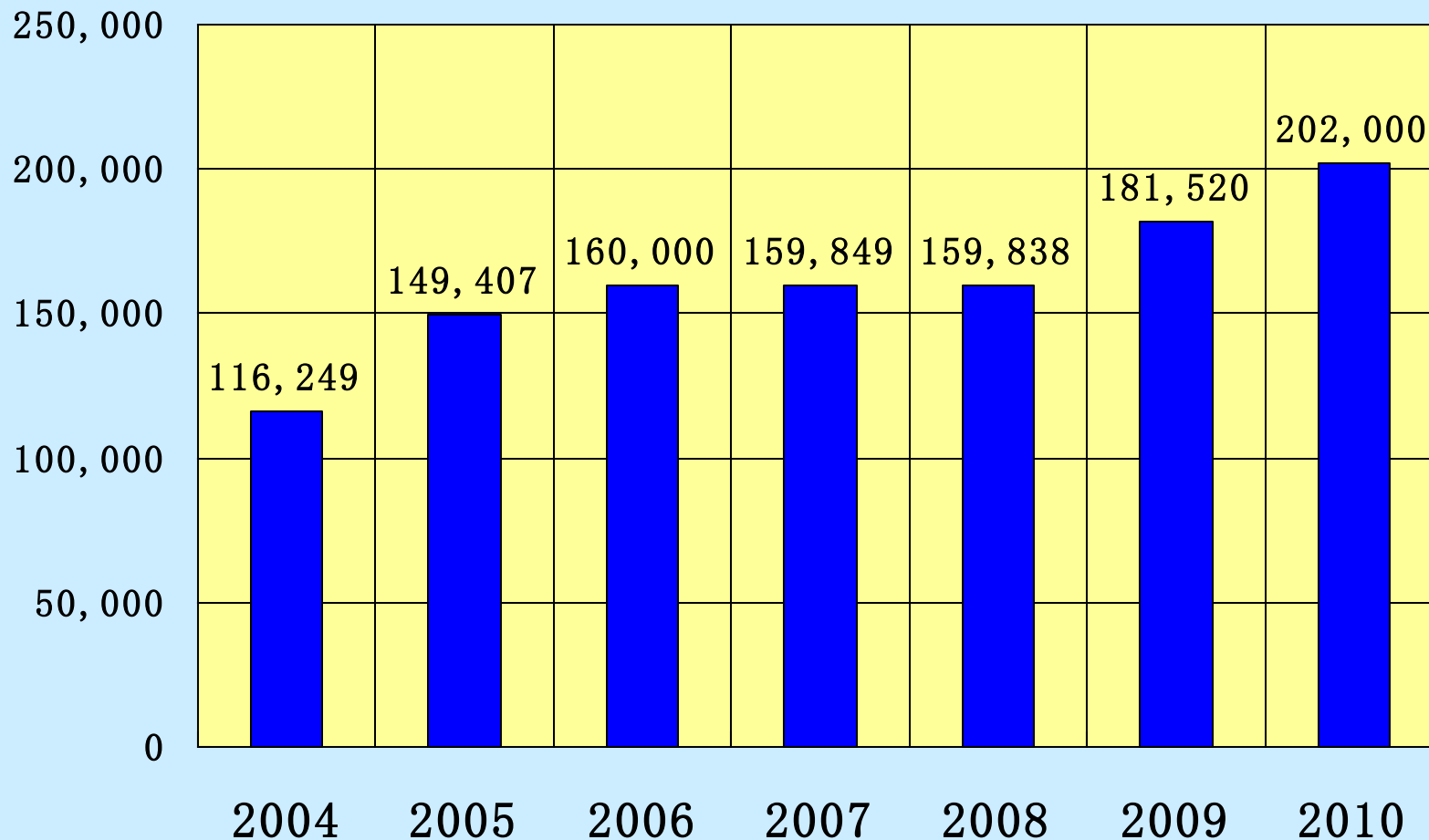


Statistic Data of EMD Business in China 2006-2010

Items	2006	2007	2008	2009	2010
Producers	16	14	14	14	14
Capacity (tpa)	200,000	210,000	216,000	230,000	260,000
Total Output (t)	160,000	159,839	159,238	181,520	202,000
C-Zn Grade (t)	-	78,387	90,159	93,889	102,155
Alkaline Grade (t)	-	81,542	69,079	87,631	99,845
Export (t)	52,758	47,057	38,947	38,720	47,963
Import (t)	7,942	6,161	2,999	1,147	1,407
Export ratio	32.97%	29.44%	24.45%	21.33%	23.74%

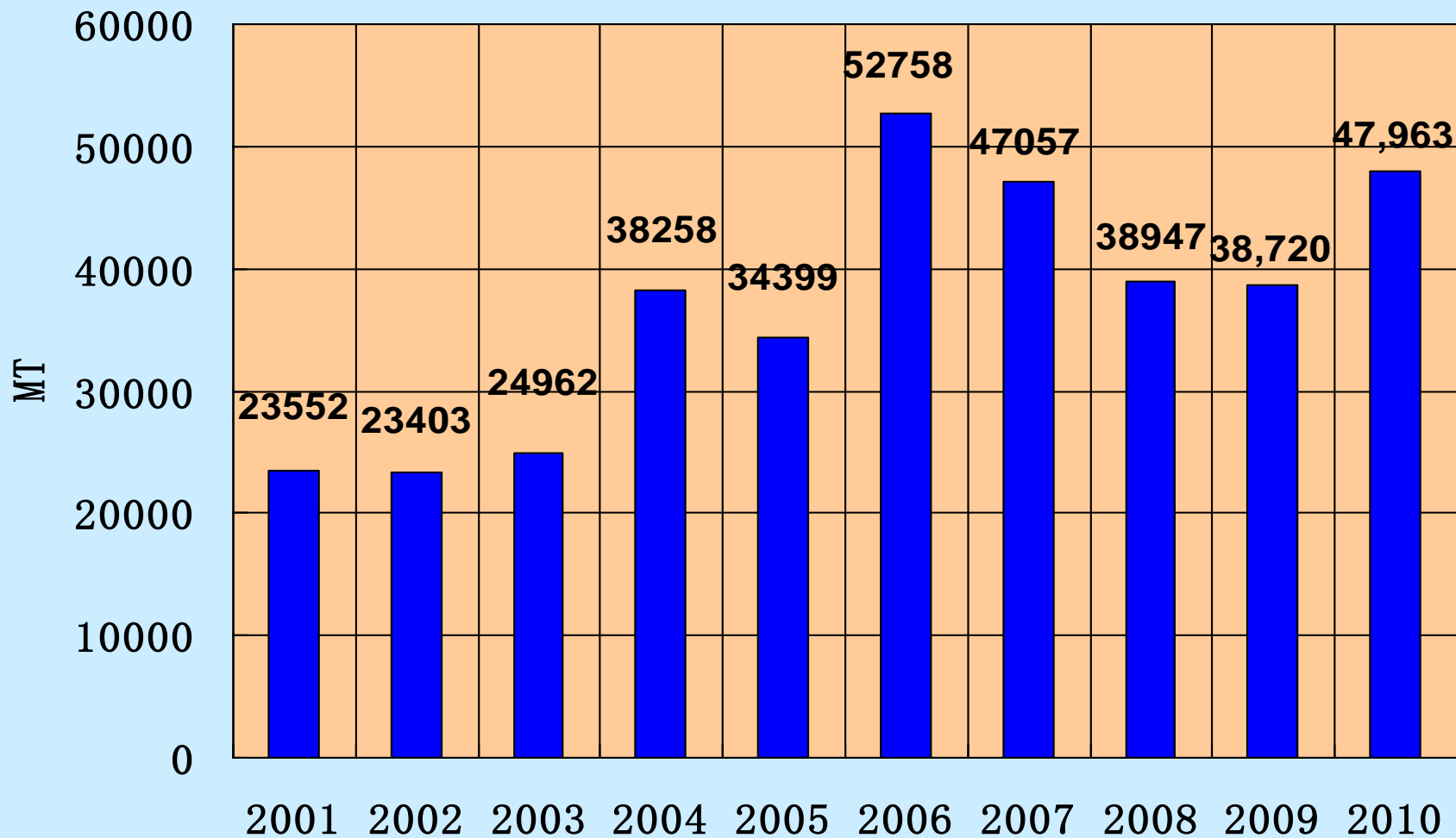


2004-2010 China EMD Production Unit: MT





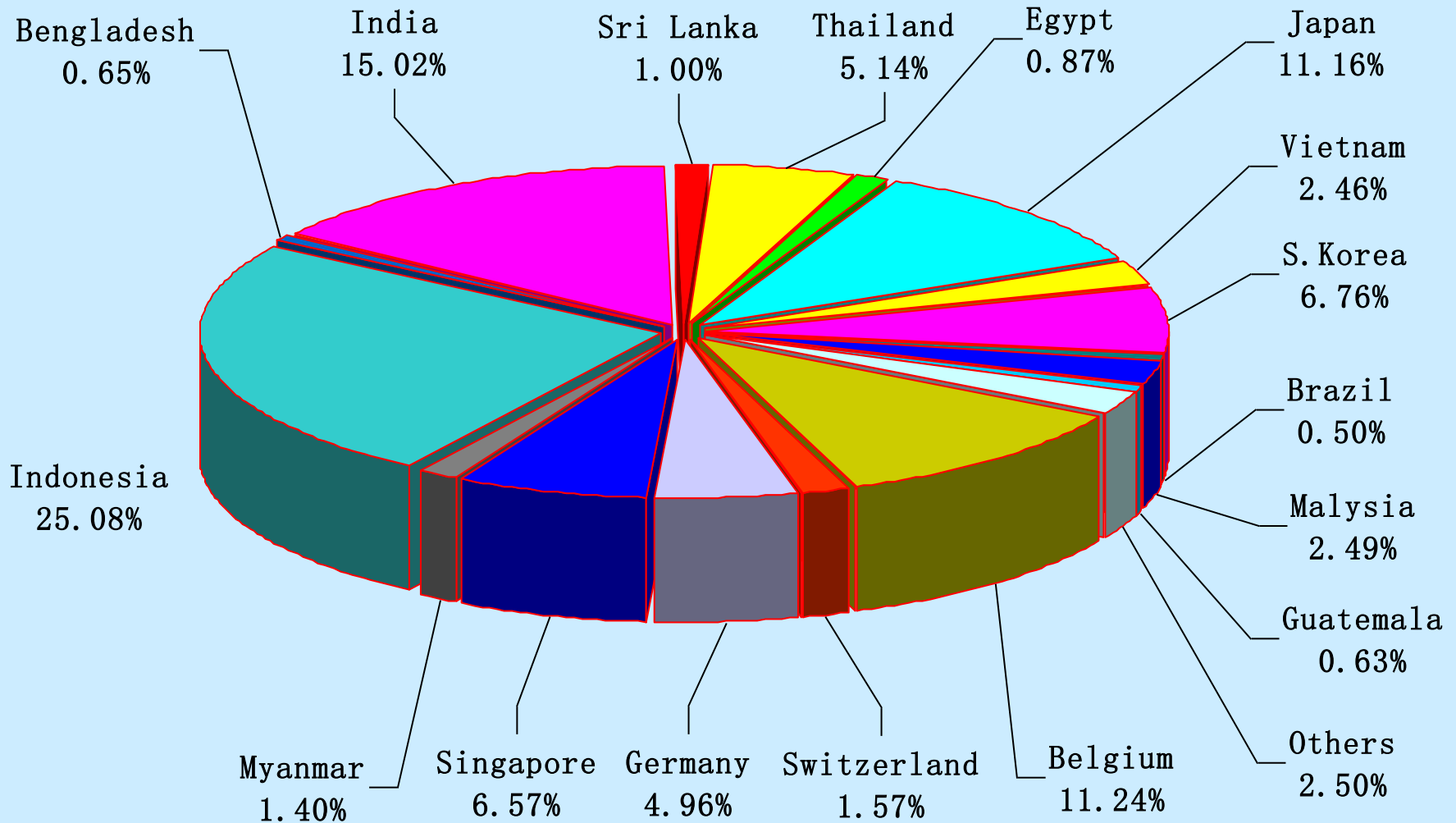
2001-2010 China EMD Exports





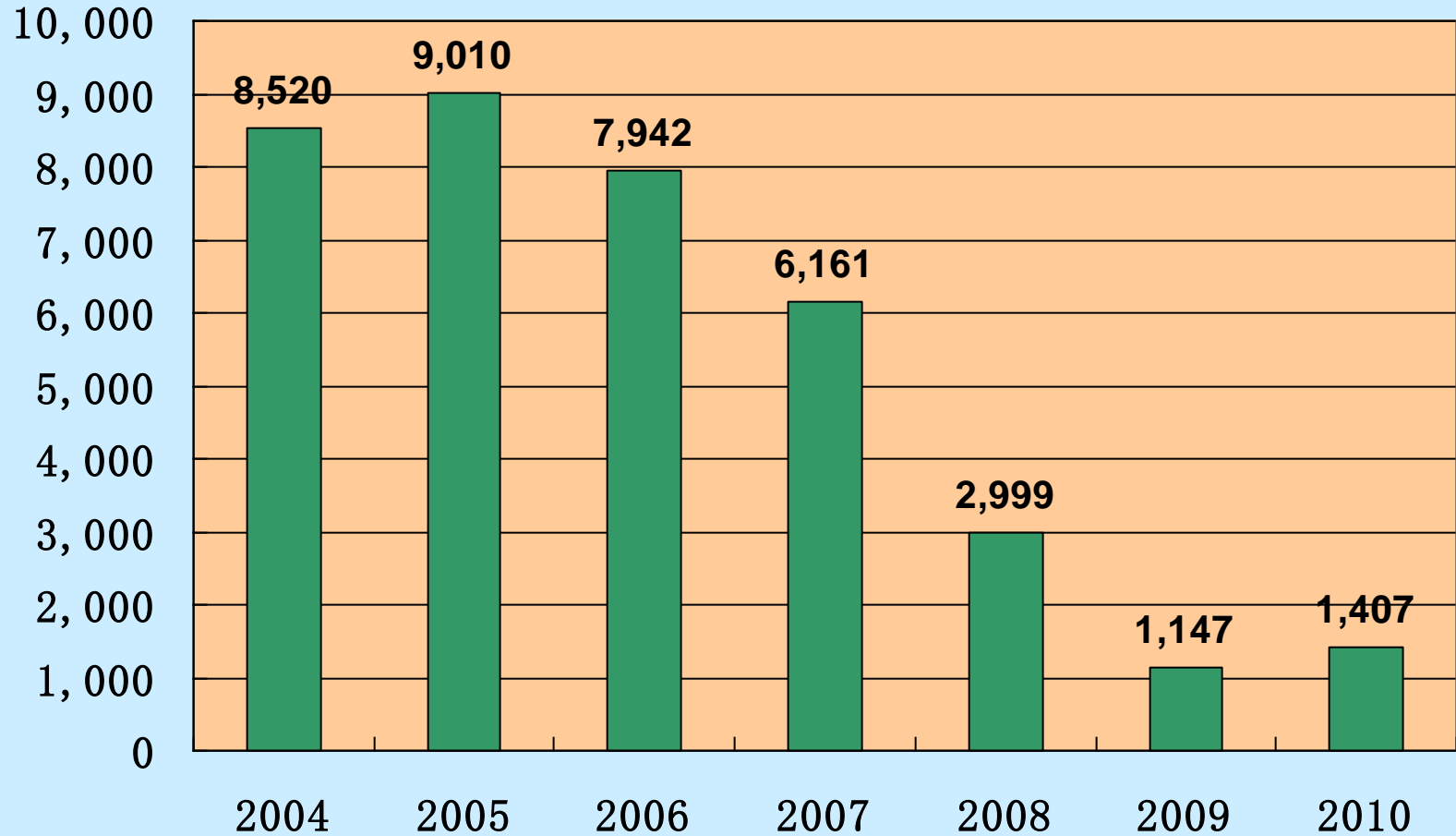
2010 China EMD Exports by Country

Total: 47,963 MT





2004-2010 China EMD Imports Unit: MT





Outlook for future market

- With global economy in recovery, 2011 will witness certain growth in EMD market.
- With China economy to continue its steady growth and various domestic consuming stimulation policy, China domestic EMD demand in 2011 will grow accordingly.
- However, EMD market competition in 2011 will remain fierce with over-capacity. Unreasonable anti-dumping actions by developed countries will continue to plague the global EMD market.
- Pressured by increasingly strong competition from secondary battery, primary battery as the mass consumer commodity still remain its strong market position with steady growth in demand, especially with bright future in developing countries.
- Rapid development in EV field is strongly pushing forward the development of Li ion battery industry, strategically expanding the new application for EMD with unlimited market potential.