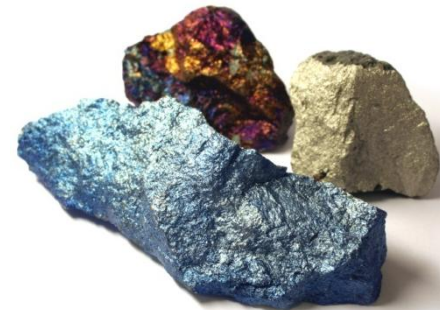




# **Global Manganese 2011**

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IMnI's 8<sup>th</sup> EPD Conference &  
3rd International Forum of Mn Electrolytic Products 2011  
Kai Wah Plaza International Hotel, Kunming  
1<sup>st</sup> April 2011



## Overview

1. Chinese steel – half of global production, strong long term fundamentals
2. ROW steel – more reasons to be positive than not
3. Mn alloy supply & demand 2010 – global recovery
4. Mn alloy trade evolution
5. Mn ore supply 2010 – strong growth, stocks up
6. Mn ore trade – greater volumes, China still king
7. Chinese ore demand - domestic and imported
8. Chinese alloy – half of world's production & consumption in China
9. Mn ore drivers in 2010
10. Summary of key points



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## 1. Chinese steel – half of global production, strong long term fundamentals

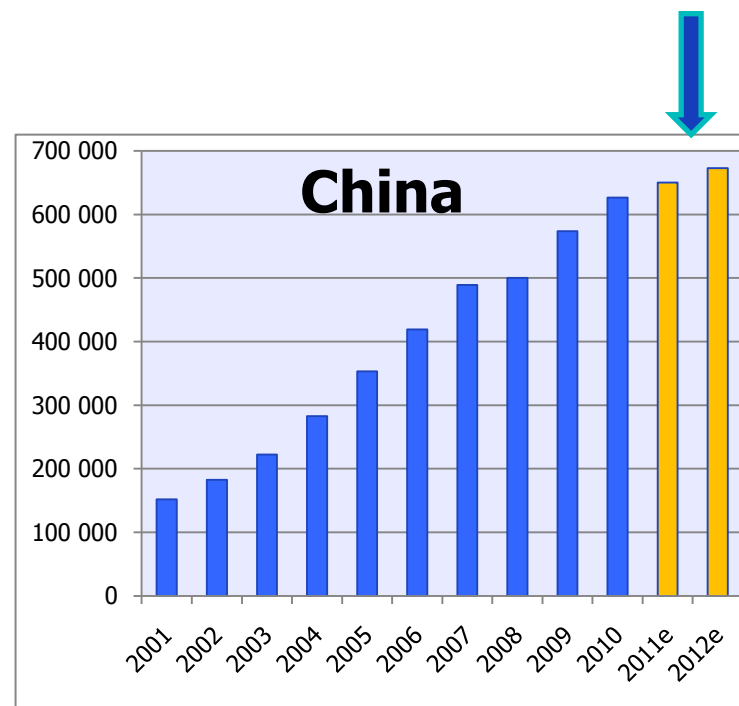
### Crude Steel Output

Source: WSA (000mt)

	World	% Change yoy	China	% Change yoy	ROW	% Change yoy
2001	851 073		151 634		699 439	
2002	904 170	6,2%	182 366	20,3%	721 804	3,2%
2003	969 915	7,3%	222 336	21,9%	747 579	3,6%
2004	1 071 468	10,5%	282 911	27,2%	788 557	5,5%
2005	1 144 091	6,8%	353 240	24,9%	790 851	0,3%
2006	1 247 178	9,0%	419 149	18,7%	828 029	4,7%
2007	1 346 130	7,9%	489 288	16,7%	856 842	3,5%
2008	1 327 189	-1,4%	500 312	2,3%	826 878	-3,5%
2009	1 229 410	-7,4%	573 567	14,6%	655 843	-20,7%
2010	1 413 596	15,0%	626 654	9,3%	786 942	20,0%
2011e	1 496 000	5,8%	650 000	3,7%	846 000	7,5%
2012 e	1 561 000	4,3%	673 000	3,5%	888 000	5,0%

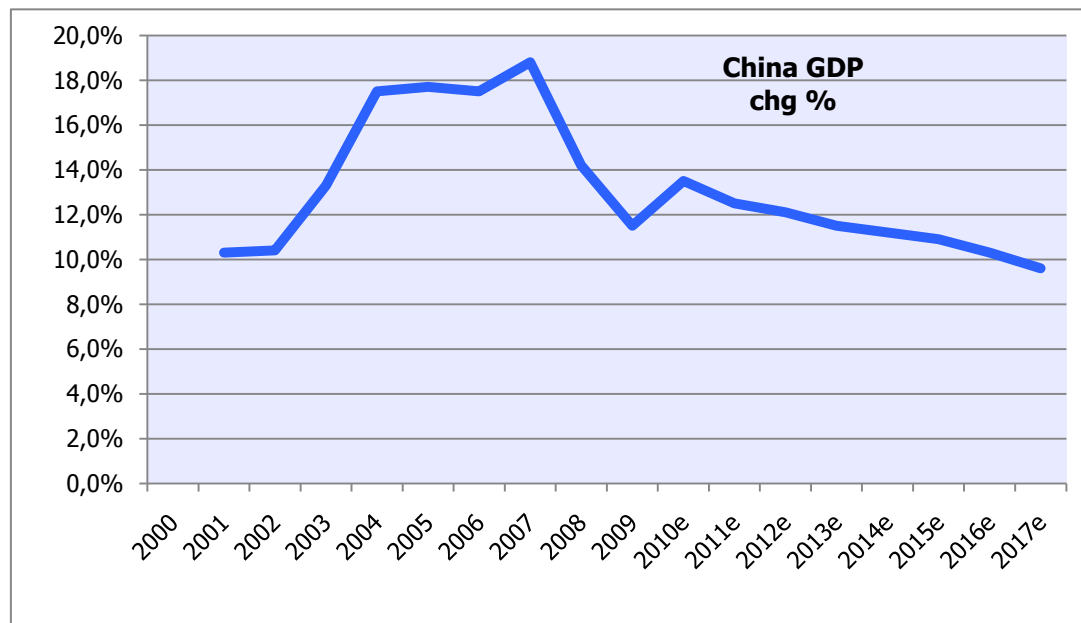
Forecast calls for a slower growth rate over the next couple of years but should still add almost 50 million tonnes in annual production by next year (2012) compared to 2010.

Projected 4% growth yoy in 2011 & 2012



## 1. Chinese steel – half of global production, strong long term fundamentals

	China GDP chg %
2000	
2001	10,3%
2002	10,4%
2003	13,3%
2004	17,5%
2005	17,7%
2006	17,5%
2007	18,8%
2008	14,2%
2009	11,5%
2010e	13,5%
2011e	12,5%
2012e	12,1%
2013e	11,5%
2014e	11,2%
2015e	10,9%
2016e	10,3%
2017e	9,6%



Forecast calls for a slower growth but GDP should still grow by 10% yoy for the next 5-7 years.

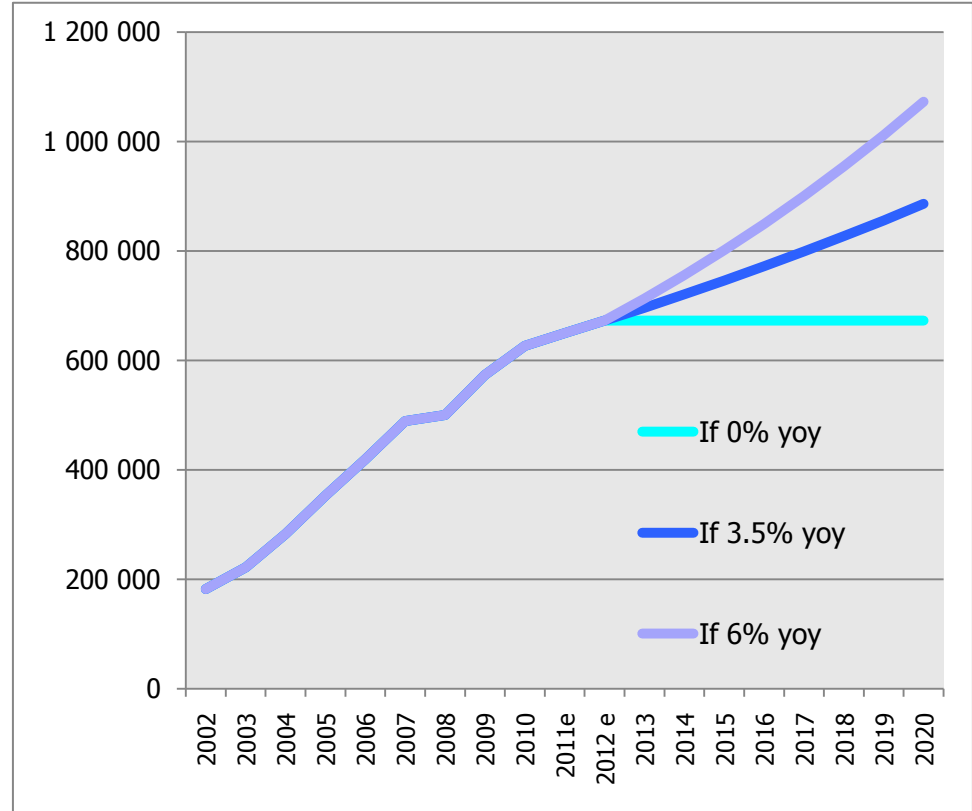
Government to focus on sustainable growth, aiming to address:

- Environmental impact from growth
- Social equality and wealth distribution
- Rising inflation – particularly in real estate & food

## 1. Chinese steel production – CAGR of 17% from 2001 thru 2010...

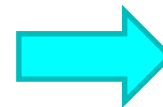
China Steel Production Growth Scenarios:

	POST 2012		
	If 0% yoy	If 3.5% yoy	If 6% yoy
2002	182 366	182 366	182 366
2003	222 336	222 336	222 336
2004	282 911	282 911	282 911
2005	353 240	353 240	353 240
2006	419 149	419 149	419 149
2007	489 288	489 288	489 288
2008	500 312	500 312	500 312
2009	573 567	573 567	573 567
2010	626 654	626 654	626 654
2011e	650 000	650 000	650 000
2012 e	673 000	673 000	673 000
2013	673 000	696 555	713 380
2014	673 000	720 934	756 183
2015	673 000	746 167	801 554
2016	673 000	772 283	849 647
2017	673 000	799 313	900 626
2018	673 000	827 289	954 663
2019	673 000	856 244	1 011 943
2020	673 000	886 212	1 072 660



### If steel production grows yoy by:

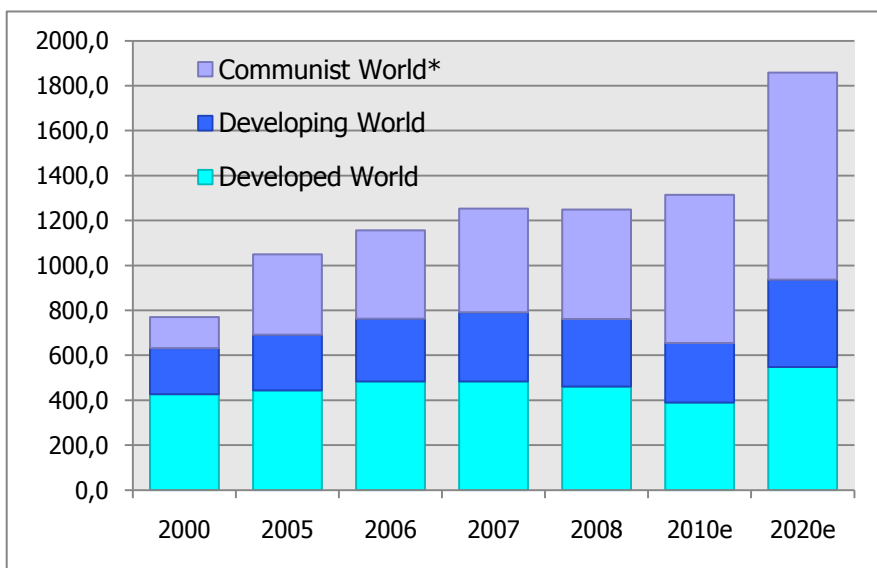
- 3.5% post 2012 = 886 million mt by 2020
- 6% post 2012 = 1.07 billion mt by 2020



**Either case: demand for Mn units to rise...**

## 2. ROW steel – more reasons to be positive than not

Global Steel Consumption -- steel product basis								CAGR
	2000	2005	2006	2007	2008	2010e	2020e	2008-2020
Developed World	426,4	443,6	483,3	483,6	461,1	389,6	547,7	1,40%
Developing World	205,0	248,2	279,1	308,5	301,1	265,0	389,6	2,20%
Communist World*	138,1	357,5	393,7	461,1	485,9	659,2	921,2	5,50%
<b>World Total</b>	<b>769,5</b>	<b>1049,3</b>	<b>1156,1</b>	<b>1253,2</b>	<b>1248,1</b>	<b>1313,8</b>	<b>1858,5</b>	<b>3,40%</b>
*Communist world includes China, N. Korea & Vietnam								



No **bull run** outside China but demand should rise steadily over the next decade:

- Developed World CAGR = 1.4%
- Developing World (ex communist countries) CAGR = 2.2%



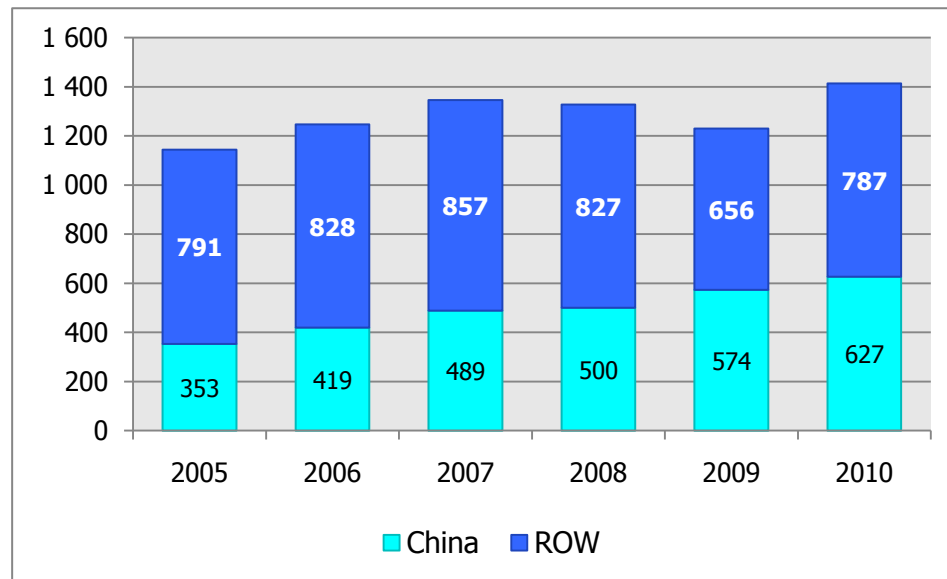
**Demand (ex communist countries):**  
to rise by 43% (or by 283 million mt) by 2020

**Total World demand to rise by 545 mln mt.**

## 2. ROW steel – more reasons to be positive than not

Crude steel Production (million mt)

	World	China	ROW
2005	1 144	353	791
2006	1 247	419	828
2007	1 346	489	857
2008	1 327	500	827
2009	1 229	574	656
2010	1 414	627	787



Rest of World (ROW) Production in 2010 = 787 million mt

WSD forecasted demand in 2020 = 937 million mt

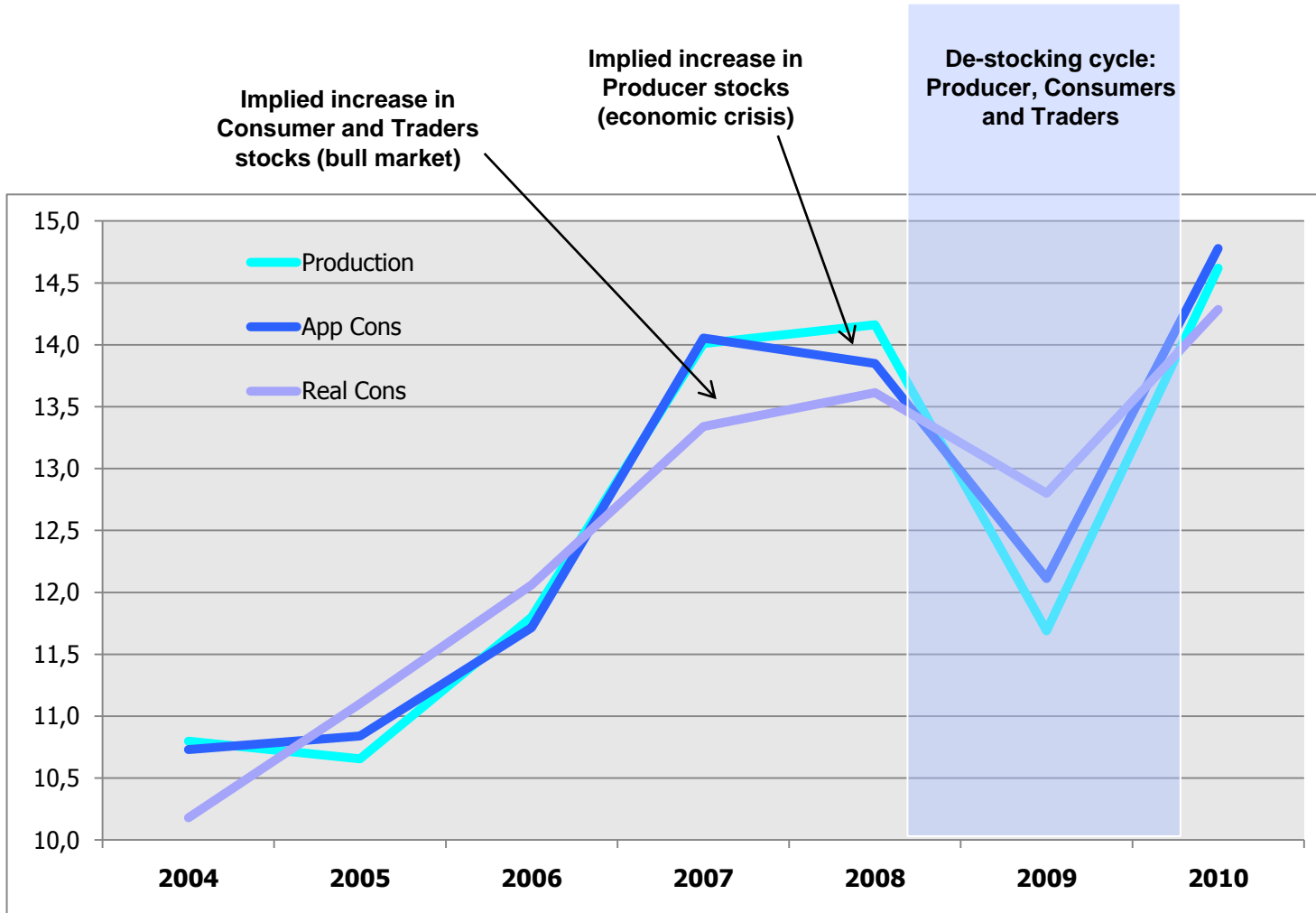


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## 3. Mn alloy supply & demand 2010 – global recovery

(gross Mn alloy million mt)

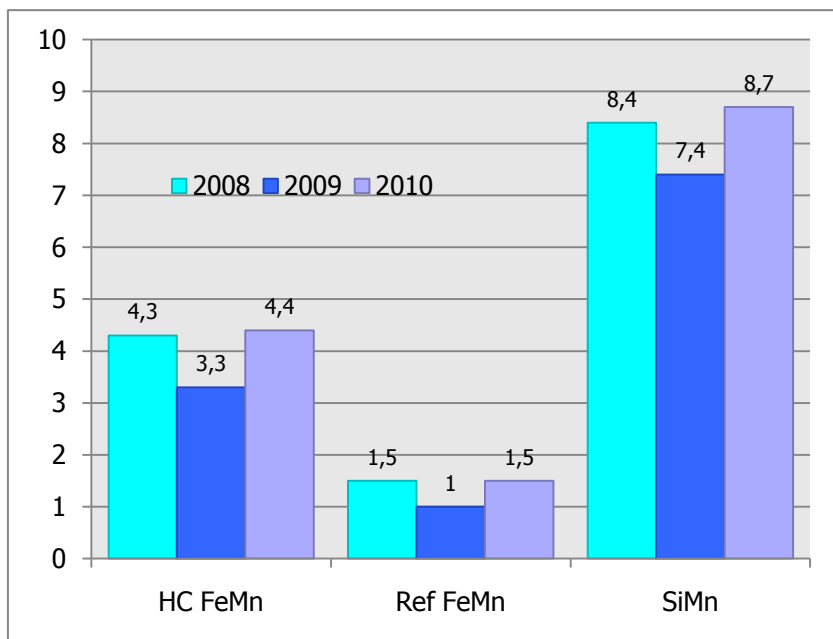


## 3. Mn alloy supply 2010 – record production

(gross Mn alloy million mt)

Mn alloy Production (million mt)

	HC FeMn	Ref FeMn	SiMn
2008	4,3	1,5	8,4
2009	3,3	1	7,4
2010	4,4	1,5	8,7



Production of all three types of Mn alloys grew strongly in 2010

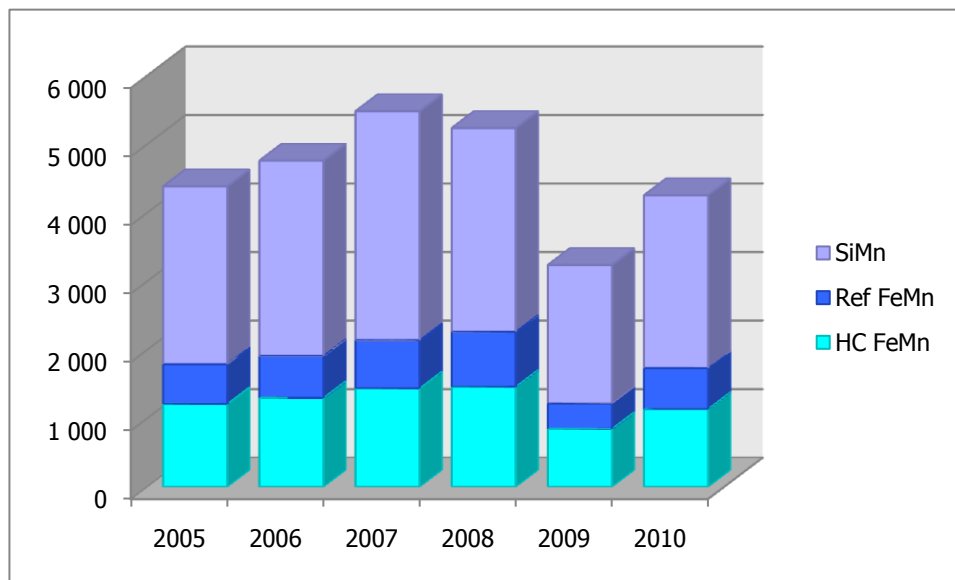
- HC FeMn grew some 33% to 4.4 mln mt after dropping to 3.3 mln mt the year before.

- Ref FeMn increased the most, rising 50% yoy to 1.5 mln mt. This is a reflection of the improvement in the industrialized world's steel sector, which produces more value-added steel products.

- SiMn rose by 18% to 8.7 mln mt in 2010. The alloy had fared best in 2009 due to significant stimulus spending on infrastructure, as well as its heavy use in China, therefore it grew less in percentage terms this past year.

## 4. Mn alloy trade evolution – total global imports returning

YR	Mn alloy Declared Imports (000 mt)		
	HC FeMn	Ref FeMn	SiMn
2005	1 210	579	2 594
2006	1 298	613	2 847
2007	1 438	701	3 341
2008	1 461	802	2 971
2009	846	370	2 020
2010	1 137	594	2 522



Imports of Mn alloys have rebounded from lows of 2009, as producers and traders looked to restock, but buying has been subdued.

(December 2010 trade data not available for some countries)

Buying has been requirement-based, not much stockpiling >> spot availability ample but not abundant in major importing countries



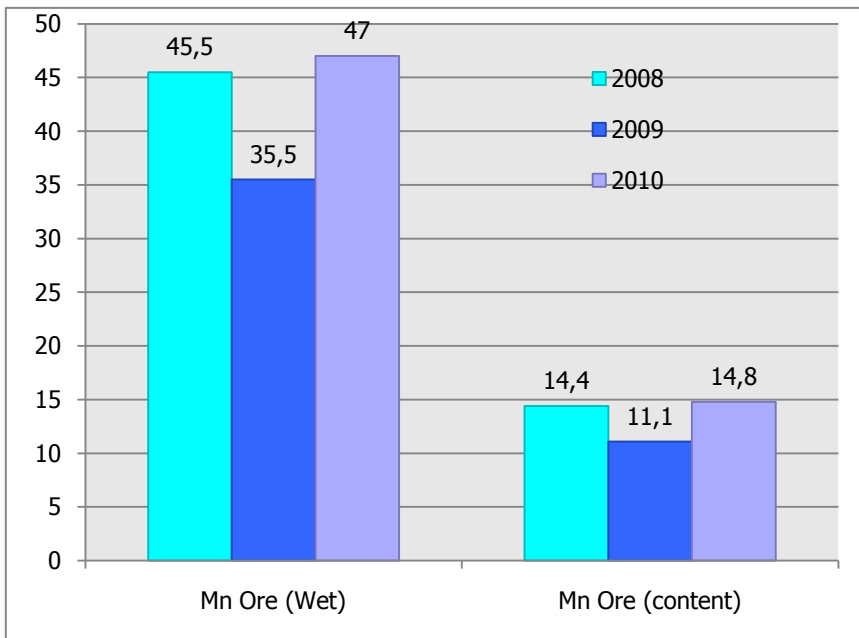
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## 5. Mn ore supply 2010 – strong growth, stocks up

Mn Ore Production (million mt)

	Mn Ore (Wet)	Mn Ore (content)
2008	45,5	14,4
2009	35,5	11,1
2010	47	14,8



***Mn ore production rates pushed up in 2010 after inventory liquation in 2009...***

Steps taken by producers after stockpiles rise in Q4 2008 and early 2009:

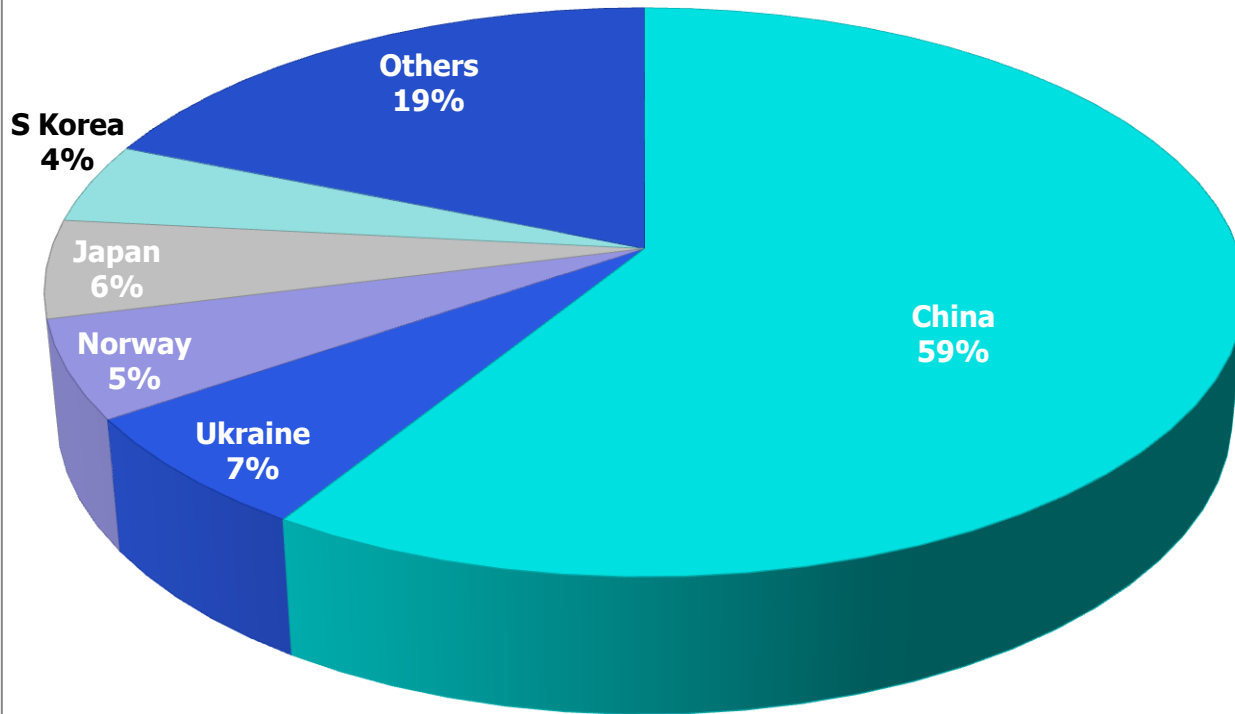
1. CUT OUTPUT >> 2009 output falls to 11 million mt of Mn units
2. INCREASE PRODUCTION RATES >> during Q1 – Q3 2010 as steel rebounded and ore stocks were low
3. DESTOCKING & CUT OUTPUT >> producer and China port stocks grew substantially putting pressure on ore market leading to output cuts in Q4 and destocking by suppliers

**TOTAL PRODUCTION 2010 = record 14.8 mln mt**

## 6. Mn ore trade – greater volumes, China still king

(declared imports by February 23, 2011 – million mt)

### Importers



Importer	Ore (mln mt)
China	11,6
Ukraine	1,3
Norway	1,1
Japan	1,1
S Korea	0,9
Others	3,7

**TOTAL IMPORTS** 19.7

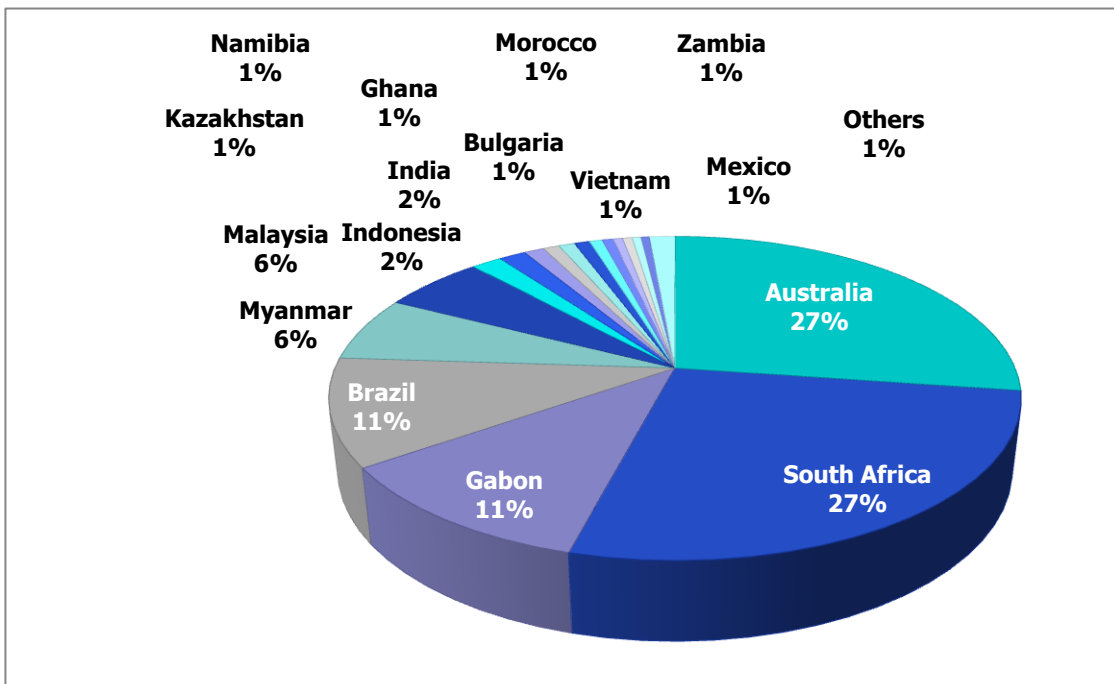
**Total Declared imports  
2010 = 20 million mt**

### China:

- imported 10 times more than any other country
- almost 60% of the total

## 6. Mn ore trade – China trade partners

Rank	Partner Country	YEAR 2010
1	Australia	3 160 436
2	South Africa	3 115 683
3	Gabon	1 296 774
4	Brazil	1 245 629
5	Myanmar	749 632
6	Malaysia	661 695
7	Indonesia	198 186
8	India	174 133
9	Ghana	130 728
10	Kazakhstan	105 328
11	Namibia	104 296
12	Bulgaria	100 121
13	Vietnam	81 986
14	Morocco	71 379
15	Mexico	62 067
16	Zambia	62 031
17	Thailand	56 859
18	Cote d Ivoire	56 134
	<i>Others</i>	<i>164 437</i>
<b>Total</b>		<b>11 597 534</b>



### Origin of China imports in 2010:

- Imports from over 20 countries: various grades and qualities of Mn ore
- The big 4 majors >75% of total imports: mostly high grade ores (8.8 mln mt)
- Therefore, other imports > 2.7 mln mt (varying quality)



## Overview

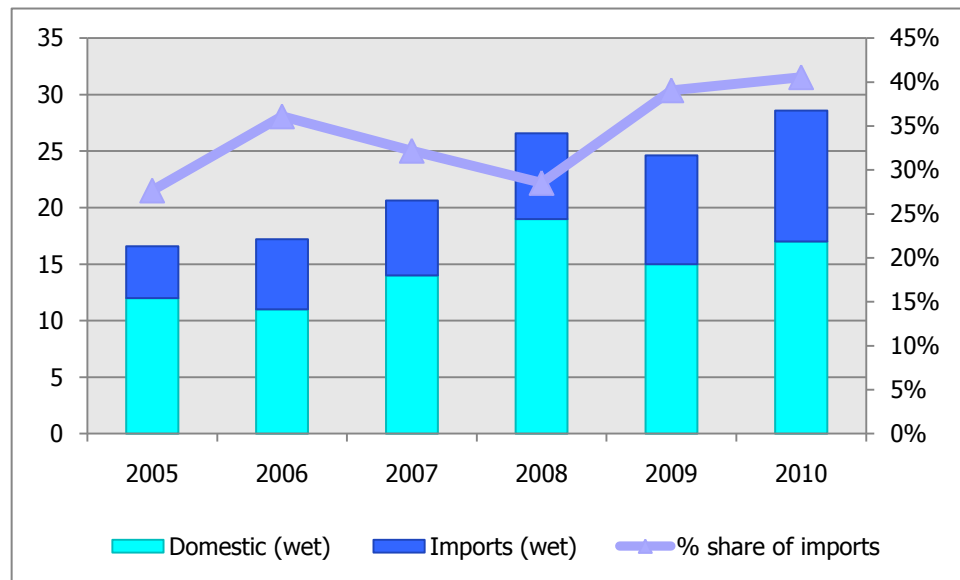
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## 7. Chinese ore demand (wet mt) – massive domestic production

### China Ore Picture (wet)

million tonnes

	Domestic (wet)	Imports (wet)	Total Demand	% share of imports
2005	12	4,6	16,6	28%
2006	11	6,2	17,2	36%
2007	14	6,6	20,6	32%
2008	19	7,6	26,6	29%
2009	15	9,6	24,6	39%
2010	17	11,6	28,6	41%



- China has produced over 15 mln mt of Mn ore in each of the last 3 years, far more in terms of wet tonnage than it has imported...

### However,

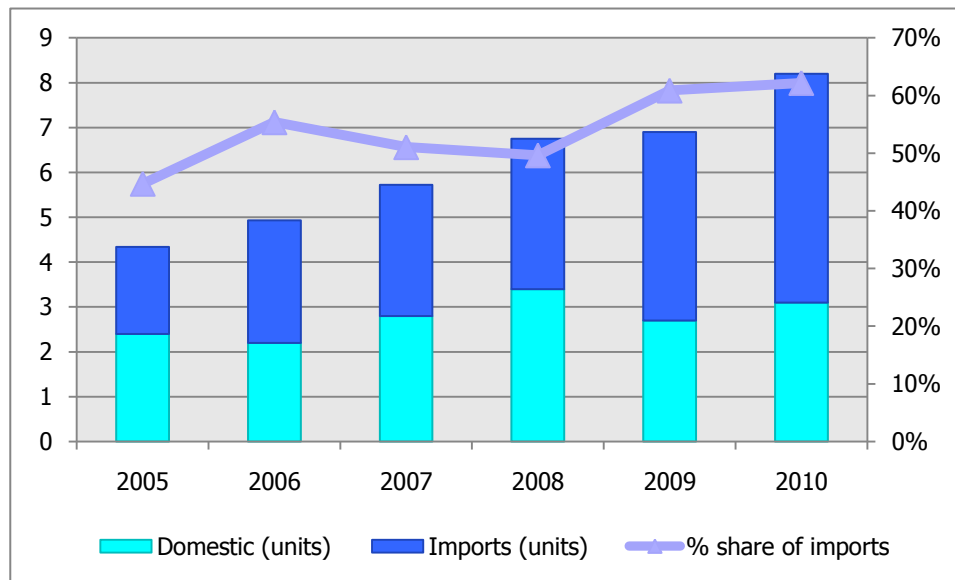
- It's domestic ore is of poor quality (18% Mn on average) vs. imports in the range of 42-44% Mn on average.

### Therefore...

## 7. Chinese ore demand (Mn units) – in 2010 imports made up over 60% of demand in units

China Ore Picture (Mn units)  
million tonnes

	Domestic (units)	Imports (units)	Total Demand	% share of imports
2005	2,4	1,9	4,3	45%
2006	2,2	2,7	4,9	55%
2007	2,8	2,9	5,7	51%
2008	3,4	3,4	6,8	50%
2009	2,7	4,2	6,9	61%
2010	3,1	5,1	8,2	62%

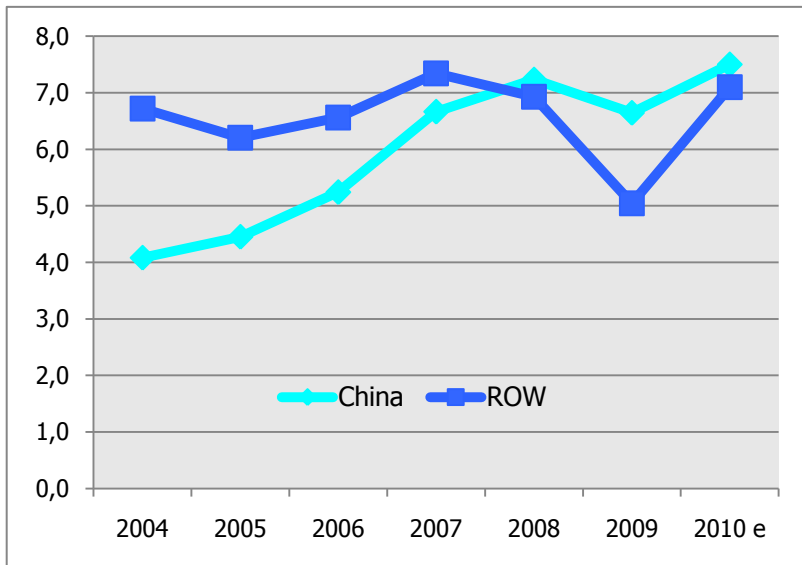


**Mn ore imports made up over 60% of China's apparent demand in 2010.**

### Reasons:

- Domestic ore is lower grade and depleting
- The government is getting stricter on local miners -- conducting inspections, enforcing shutdowns and most recently pushing for major consolidation >> Prices have risen and availability has tightened.
- About ½ of domestic ore is consumed during the production of Mn Metal, imports more suited raw material for the growing Mn alloy industry.

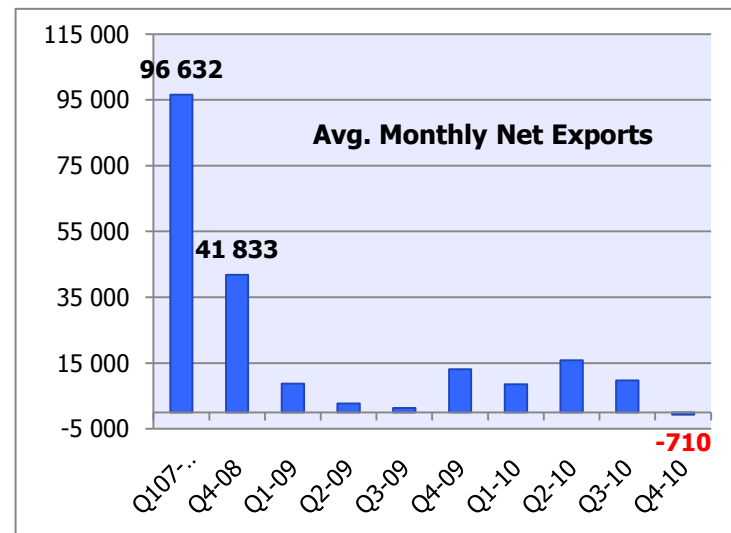
## 8. Chinese alloys – big and domestically focused



Mn Alloy Production

	China	ROW	World
2004	4,1	6,7	10,8
2005	4,4	6,2	10,7
2006	5,2	6,6	11,8
2007	6,7	7,3	14,0
2008	7,2	6,9	14,2
2009	6,6	5,0	11,7
2010 e	7,5	7,1	14,6

- Over half of world's alloys are produced in China.
- Formerly the biggest supplier of Mn alloys to world.
- Exports have fallen to insignificant levels due to a lack of global competitiveness -- higher costs (power, labour, environment, imported ore) and government imposed 20% export duty.
- Almost all domestically-produced alloys are now destined for China steel mills.

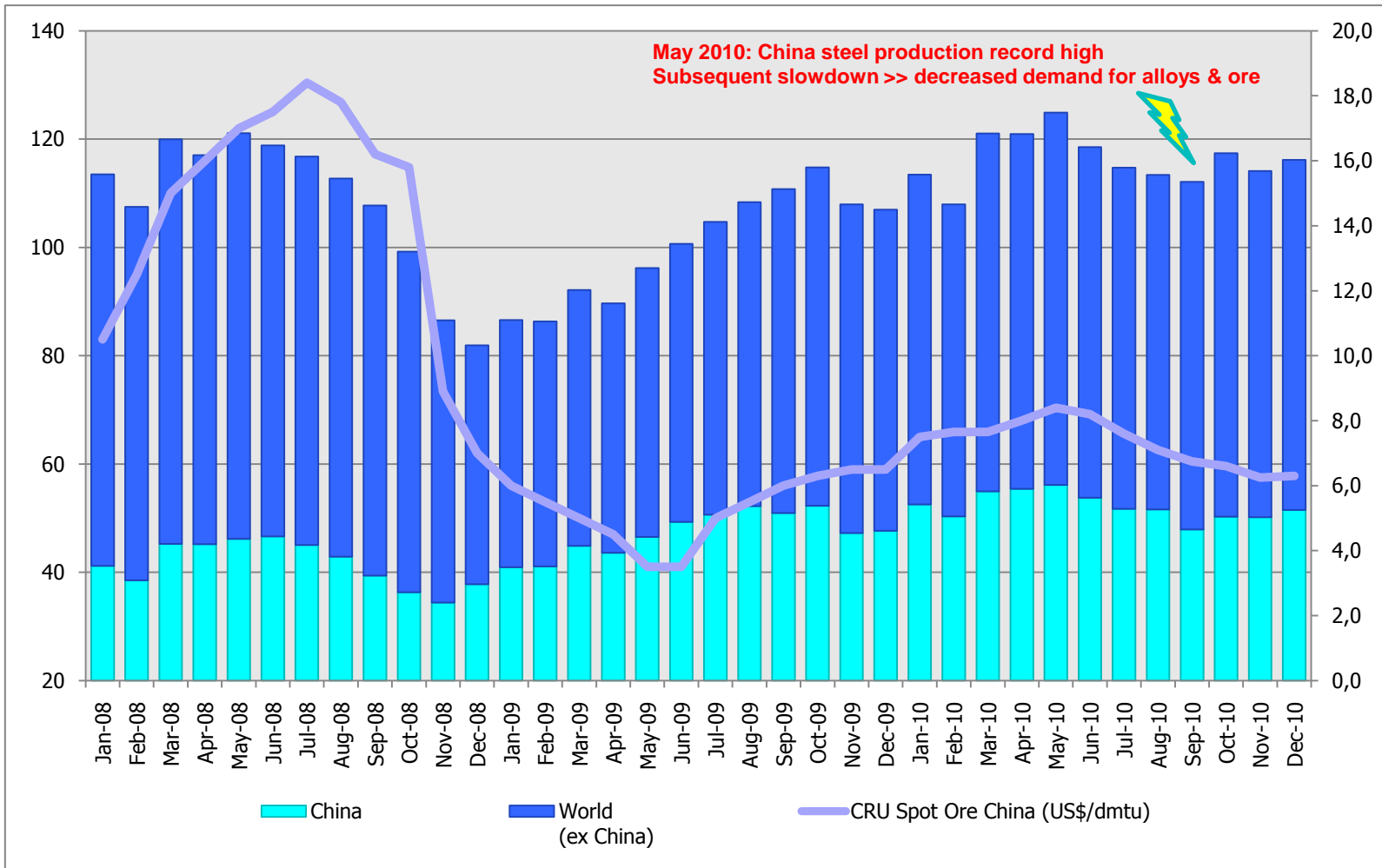




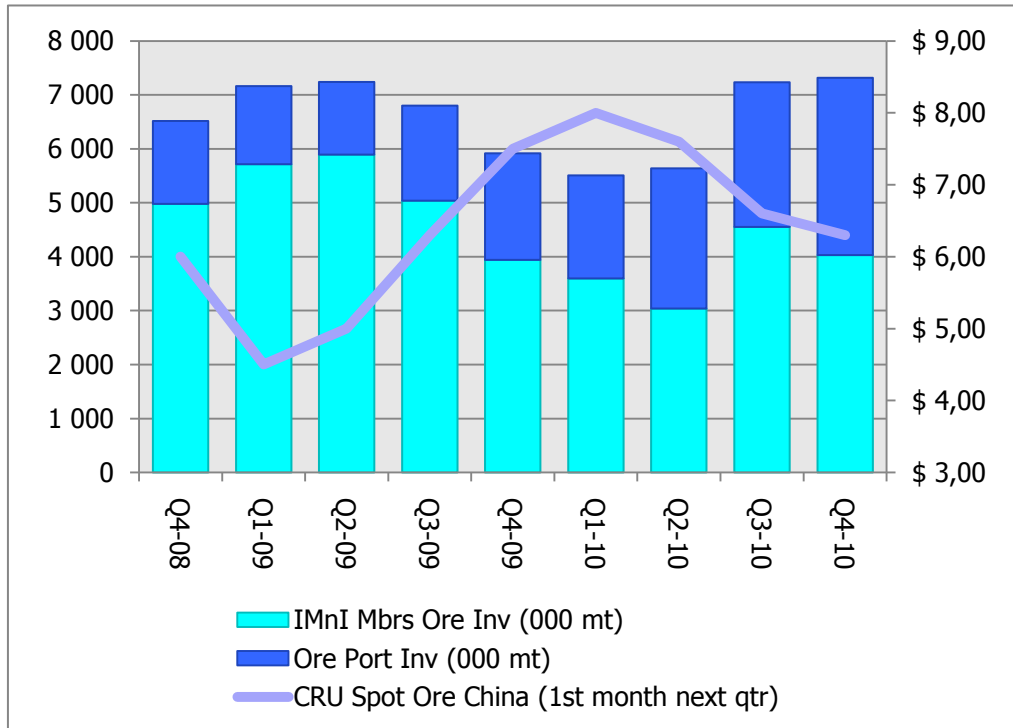
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## 9. Mn Ore Drivers: prices have not returned to pre-crisis levels although annual steel production was at an all-time high... why?



## 9. Mn Ore Drivers: Port Inventories and Supplier Inventories

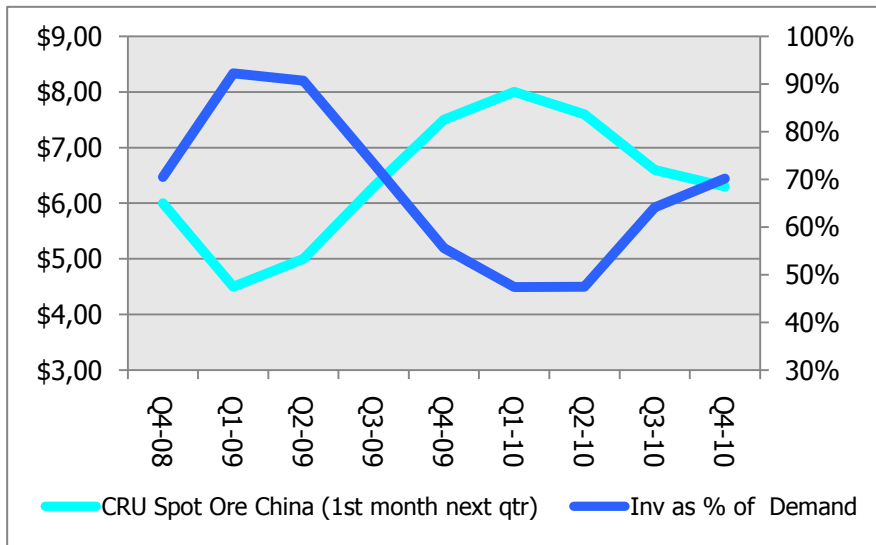
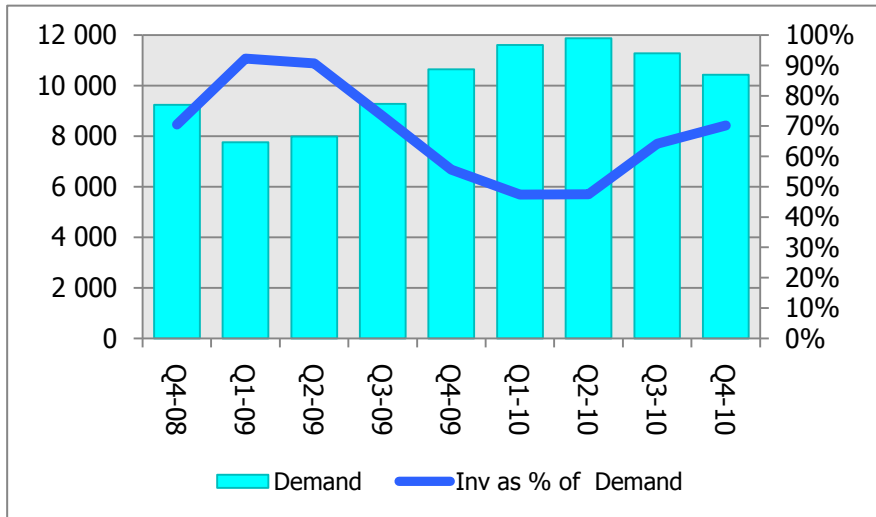


1. Chinese government emission cutting efforts led to decreased steel and alloy production in H2 2010.

2. This was not anticipated by ore producers and led to inventory stockpiling, both at mines and at China Ports and to ore price declines.

3. In Q4: Producers reduced inventories significantly but port stocks rose again.

## 9. Mn Ore Drivers: Inventories as a % of Demand



One of the best indicators of ore price is *inventories as % of demand...*

### ***What happened in 2010:***

Demand fell back in Q3 and then heavily in Q4, again mostly due to China's emission cutting.

Stocks grew very significantly at producers and at China ports in Q3 and to a lesser extent in Q4 (*producers scaled back output in Q4 reacting to the situation in China*).

Stocks amounted to around 70% of real demand by the end of Q4.



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## Key Points

1. Steel annual output at record levels: China climbing / most of the rest of world coming around
2. Alloys in 2010 have returned to 2008 level after a year of heavy destocking, supply-demand moving together; less surplus availability compared to 2008
3. Trade flows of alloys have increased significantly from 2009, but still lag behind 2008, mostly due to leaner buying.
4. Ore producers pushed production to record levels but were forced to apply the brakes as inventories rose in Q3. A slowdown in China demand due to an unforeseen emission cutting program from the government was a key driver.
5. Ore imports continued to be dominated by China, with over 11 mln wet mt. The world imported 20 mln mt in 2010, over 40% of global production and an even higher proportion if counting Mn units.
6. China port stocks amount to roughly 3 months of imports. Questions remain regarding the 'Origin & Quality' of these ores, as well as what volume of stock is now to be considered 'Normal'. Answers to these will help us gauge if these stocks can be a valuable stand alone indicator of the ore market.



Thank you. Any questions?

Or contact us at: [stats@manganese.org](mailto:stats@manganese.org)

