

Mn Ore and Mn Industry Development

**China National Mn Technology
Committee**

Mar.30,2007 Guilin, China

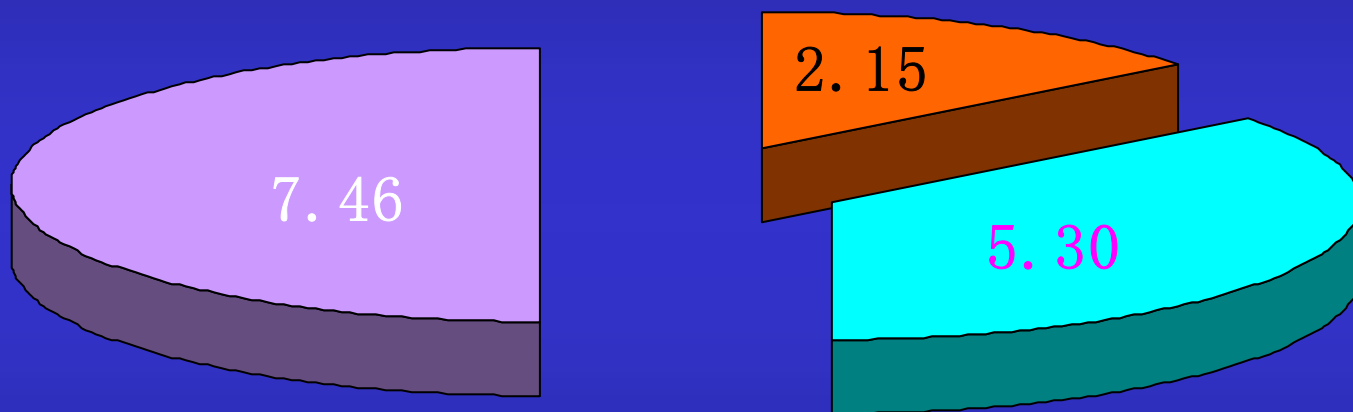
- 1、 General Information on the Resource**
- 2、 Production, Consumption and Import**
- 3、 Achievement and Contribution**
- 4、 Outlook on Mn Ore**
- 5、 Measures and Advice**

1、 General Information of China Mn Ore

1) Reserves:

- By the end of 2005,
- 23 provinces find Mn ore reserve,
- 295 Mn Ore Mine districts perambulated,
- Reserves perambulated: 0.746 billion tons,
- Reserve and basic reserve: 0.215 billion tons,
- Reserve volume: 0.53 billion tons,
- Only 0.3 billion tons are available, accounting to 42% of the total

reserve、 basic reserve、 reserve volume、 reserve
perambulated/0.1billiont



Reserve and Basic Reserve

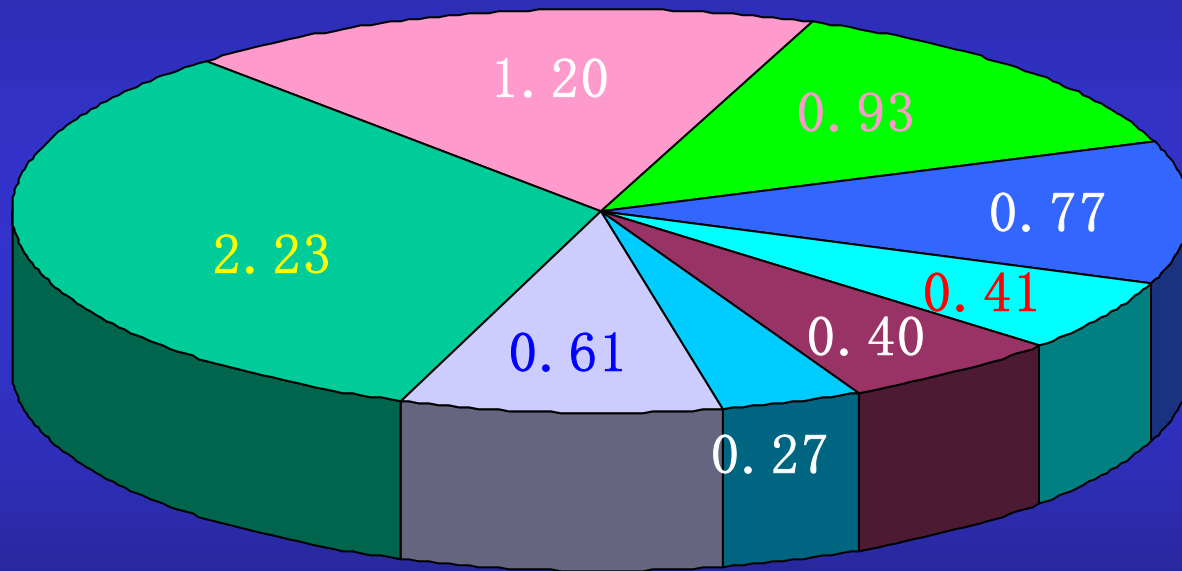
total resereve

reserve perambulated

2) Distribution:

- **Not equilibrium geographically**
- **In Guizhou, Hunan, Yunnan Shanxi and Liaoning**
- **6 provinces amount to total national :**
- **reserve: 92%**
- **Basic reserve: 90% 、**
- **Reserve perambulated: 86% ;**
- **A layout focusing on Guizhou, Hunan, Yunnan Shanxi and Liaoning is formed**

layout of reserve perambulated/0.1 billion ton



■ Guan
gxi

■ Huna
n

■ Yunn
an

■ Guiz
hou

■ G

▲3).Features:

▲Ore bed is thin,mitigate and deep

▲ore is poor, bits and pieces and mixed

▲Poor Mn mine are major ones, amounts to 22%

▲creosote Mn mine holds a 18-20% average;

▲rich Mn mine amounts to only 6.4%;

▲Mn Mine holds a complex construction;

▲thin granularity;

▲Content of P and S is high

4)、 main areas:

- ① **Southwest of Guizhou (Daxin、 Tiandeng、 Jingxi) ;**
- ② **Mn triangle in Hunan, Yunnan and Chongqing (Huahuan.Xiushan.Songtao) ;**
- ③ **Zhunyi Districe in Guizhou;**
- ④ **Chaoyang Districe in Liaoning;**
- ⑤ **Eastern part of Yunnan;**
- ⑥ **Middle of Hunan;**
- ⑦ **South of HUnan;**
- ⑧ **Daba Mountion in Shanxi;**

the above 8 districes has a reserve of 0.46 billion tons, amounts to 80% of national reserve; they are major Mn mine areas, Mn pdoduct base and base of sustainable rural material

2、 production choosing, consumption and import

Choosing of Mn mine is closely connected to the following:

▲ crude steel

▲ Mn ferro-alloy,

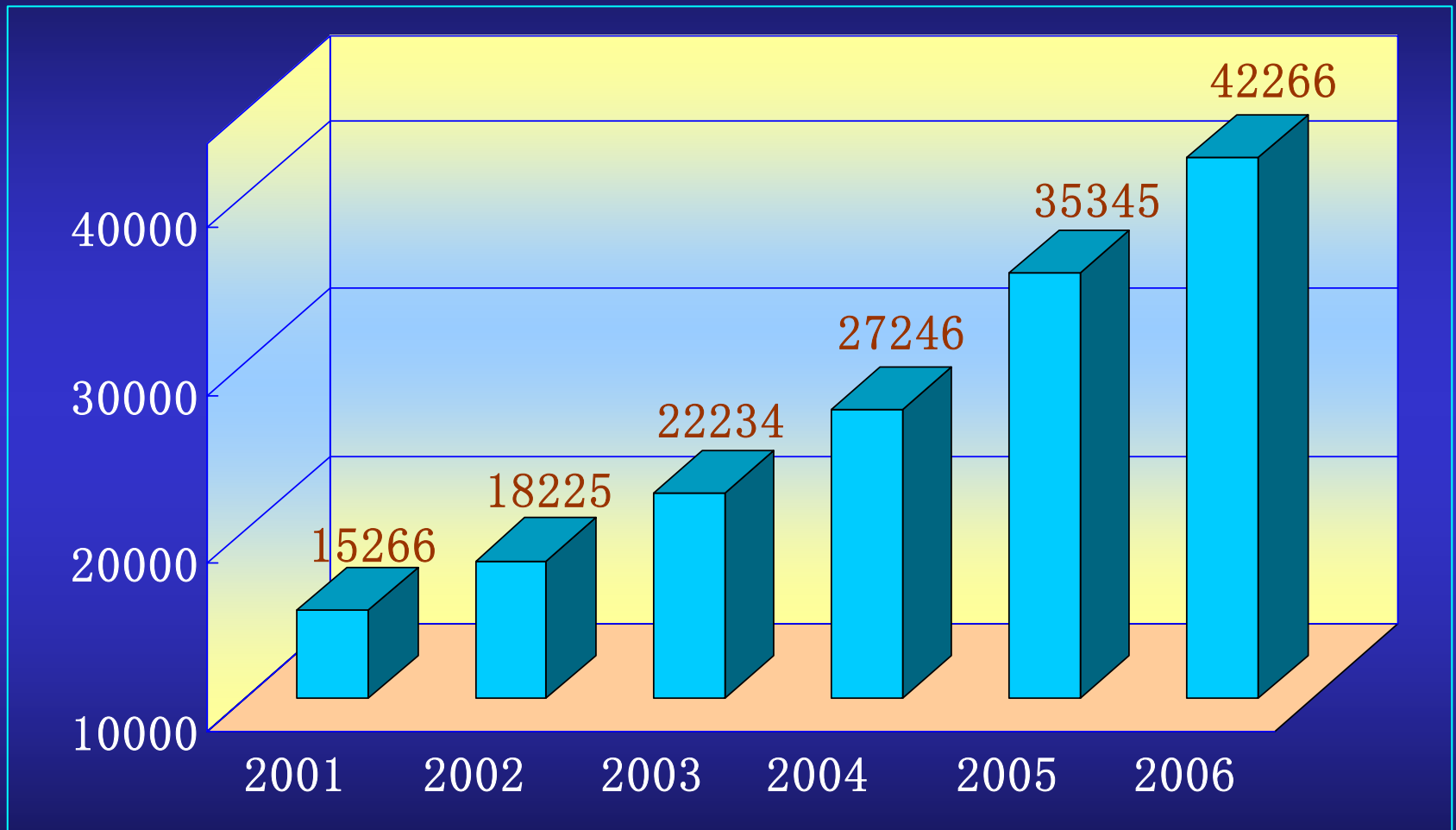
▲ Export & Import

▲ other industries consumption Mn,

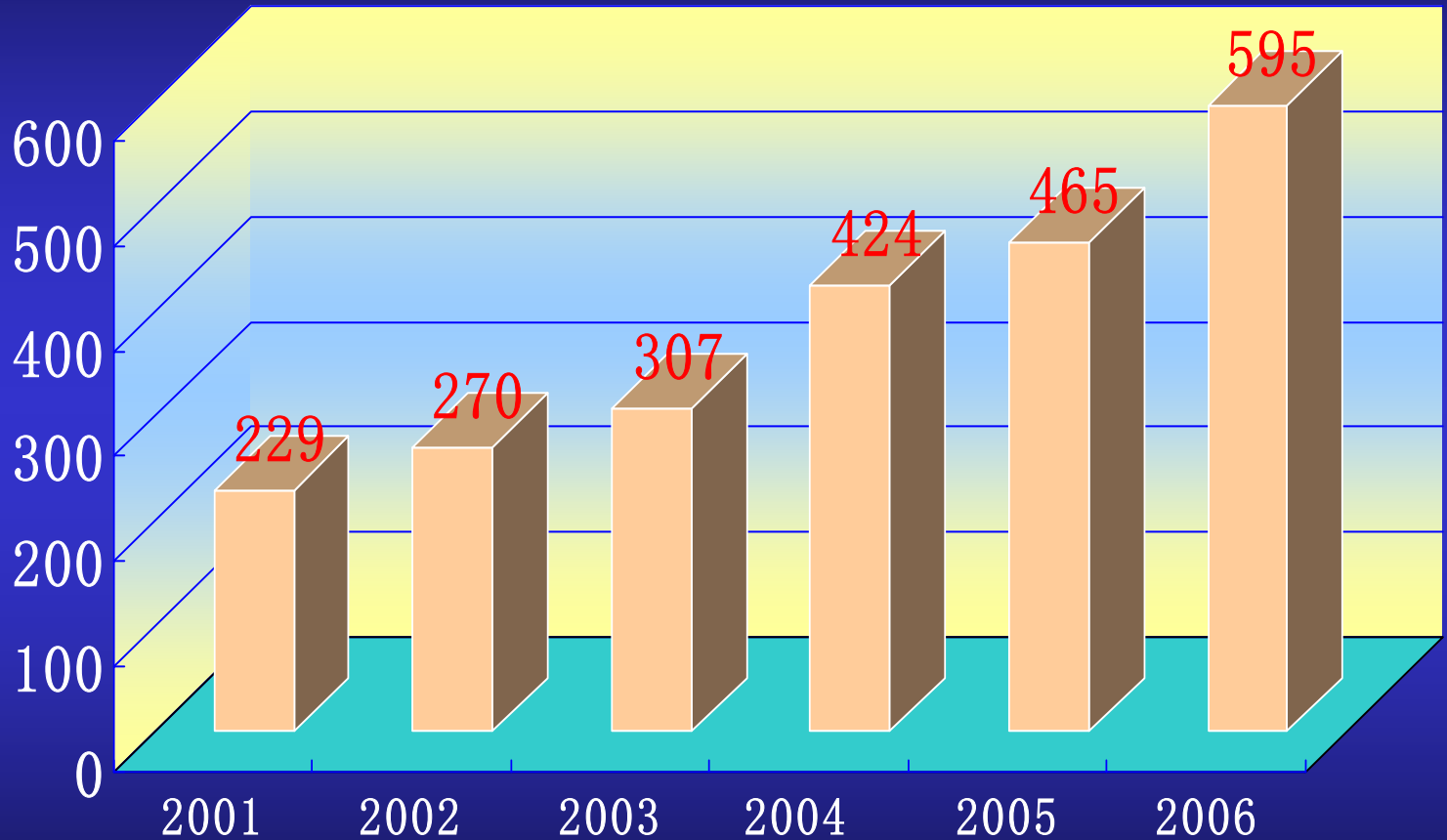
▲ import of Mn mine。

- ◇ **steel industry develops rapidly;**
- ◇ **production of Mn improves a lot;**
- ◇ **increasing export,**
- ◇ **industries consuming Mn develops.**

Crude steel production in China/10thousand t



Production of Mn alloy/10 thousand t

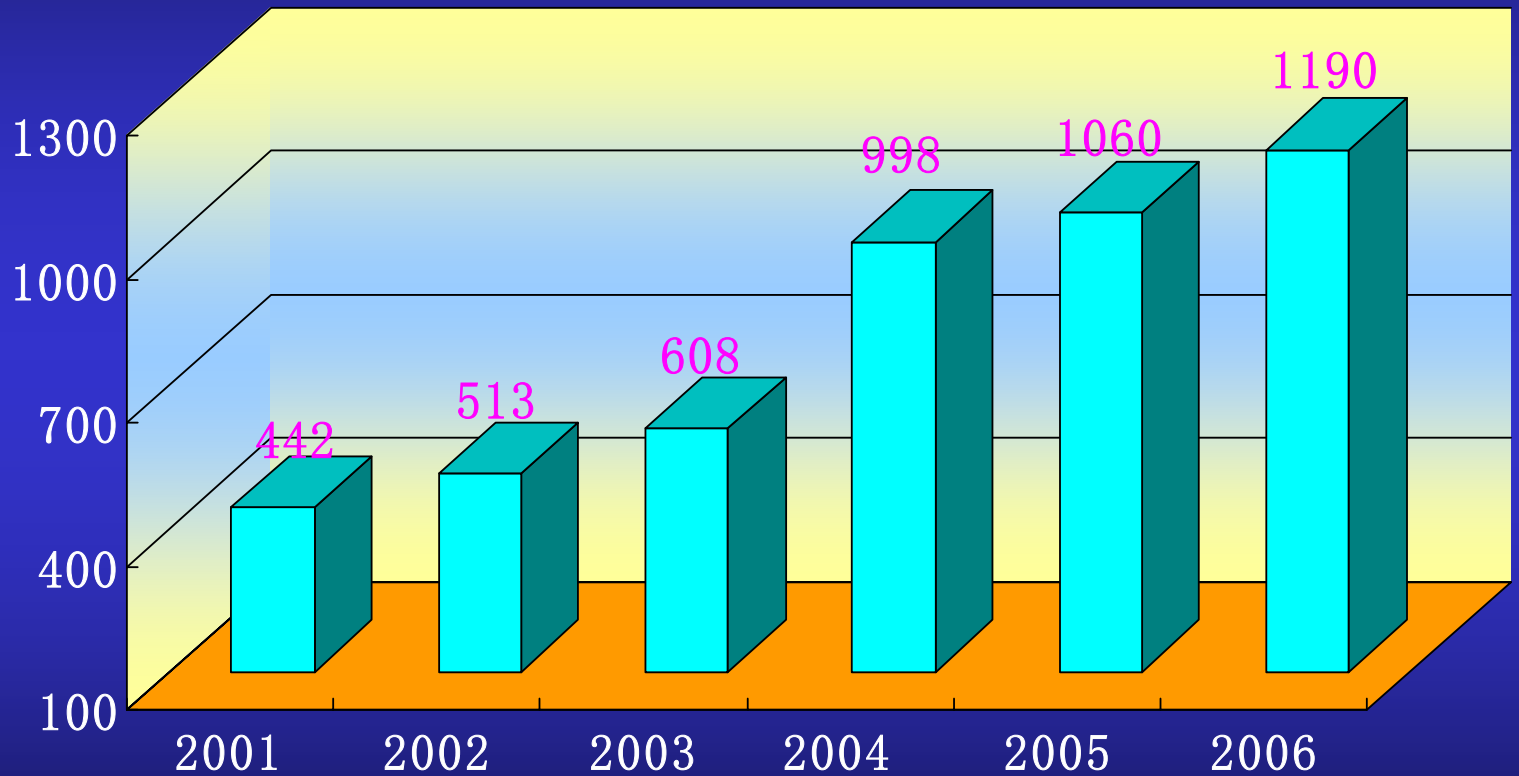


Mn production on breed/10 thousand t



- **1、 mining:**
- **More than 500 mines lays everywhere;**
- **Output in 2006: 11.90million tons;**
- **Largest output area: Mn triangle
3.53million tons;**
- **Province with most output; Guangxi 2.5
million tons;**
- **Town with the most output:
Huahuan1.13million tons**
- **Manufacture with the most output:
Zhongxin Dameng 0.9 million tons;**

Layout of Mn ore/10 thousand t



2、consumption:

3 main kinds of Mn product :

(1) Mn Ferro-alloy

rich Mn dregs、 Mn-Si alloy、 low, medium and high carbon Mn ferro-alloy

amine Mn ferro-alloy、 Mn、 EMM、 amine Mn etc;

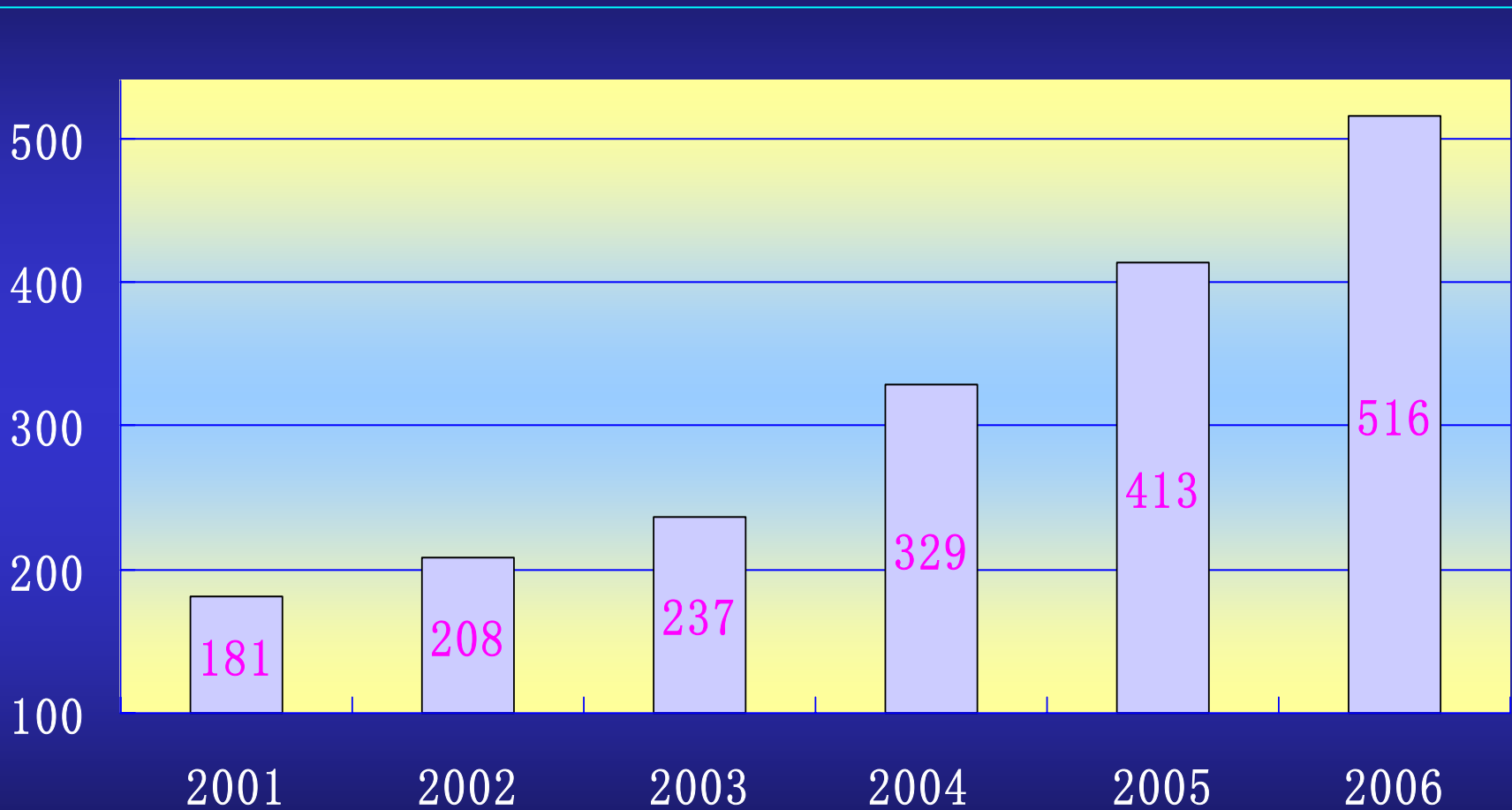
(2) Mn oxid

EMD、 NMD、 CMD、 AMD;

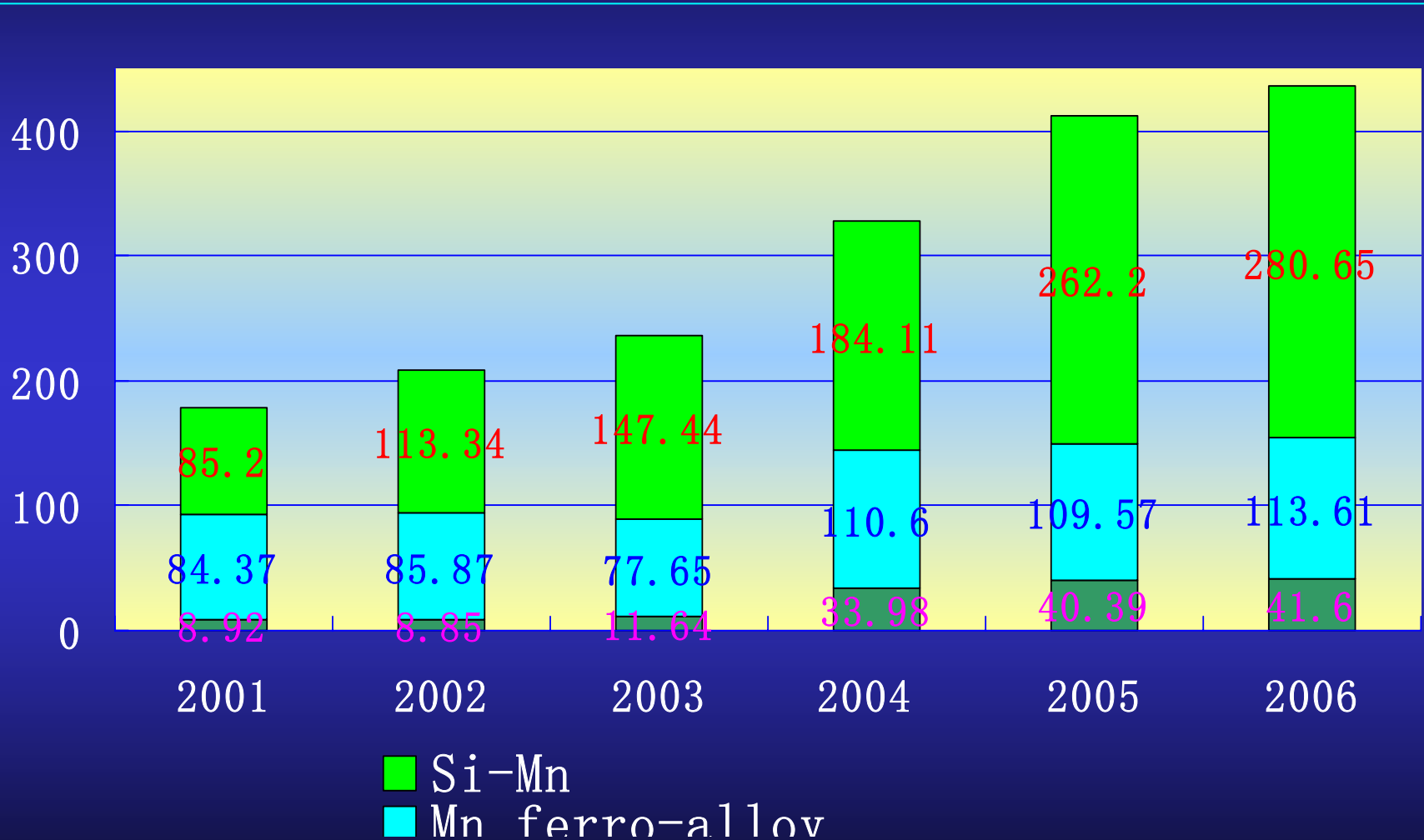
(3) Mn salt

MnSo₂、 creosote Mn、 oxalic acid Mn etc.

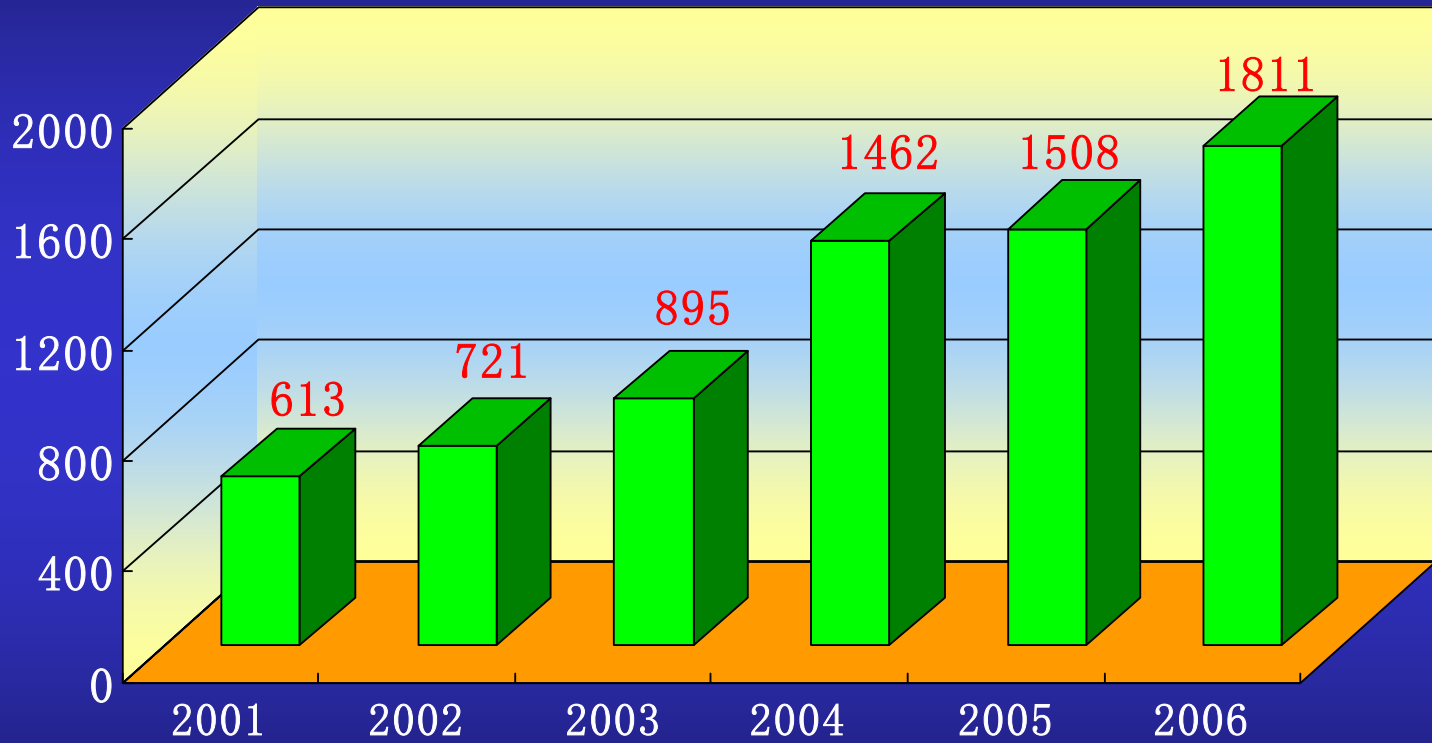
Consumption of MN ferro-alloy/10 thousand t



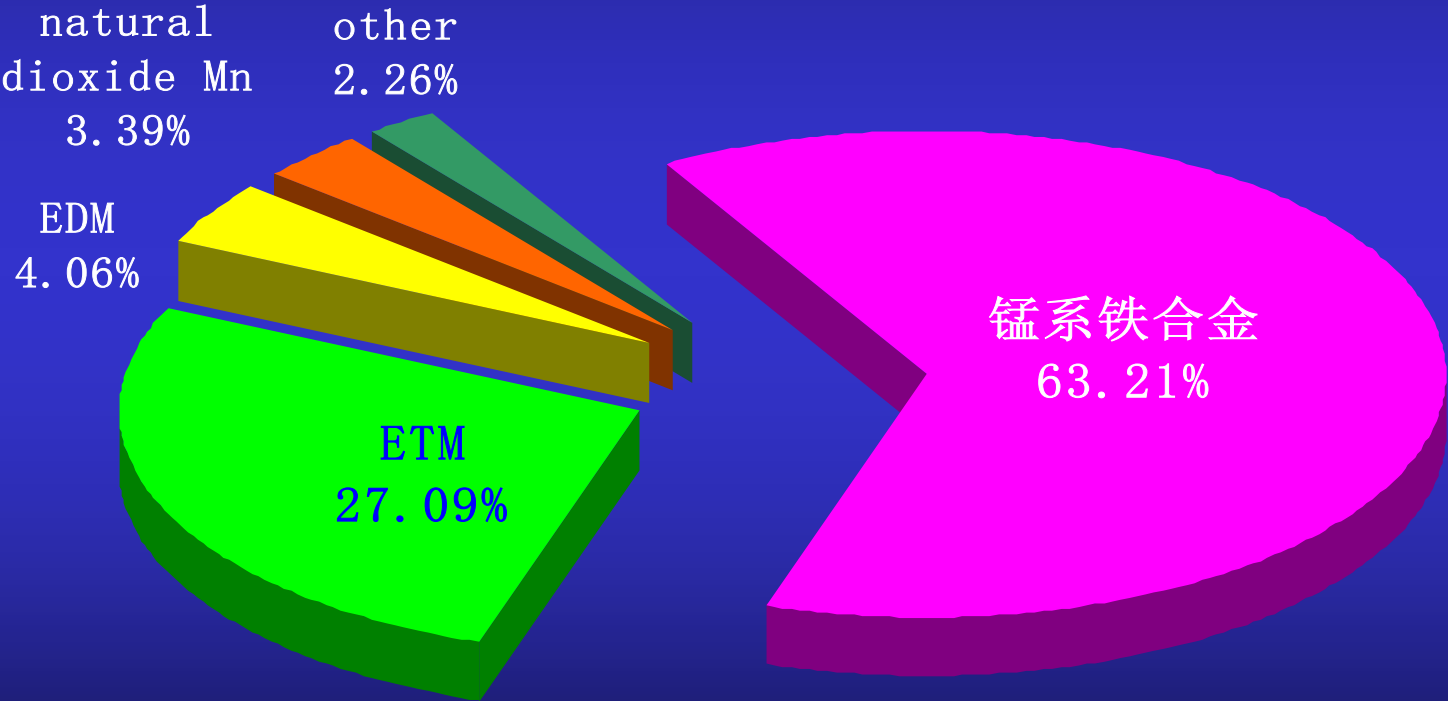
Mn ferro-alloy consumption on breed/10 thousand t



Consumption of Mn ore/10 thousand t

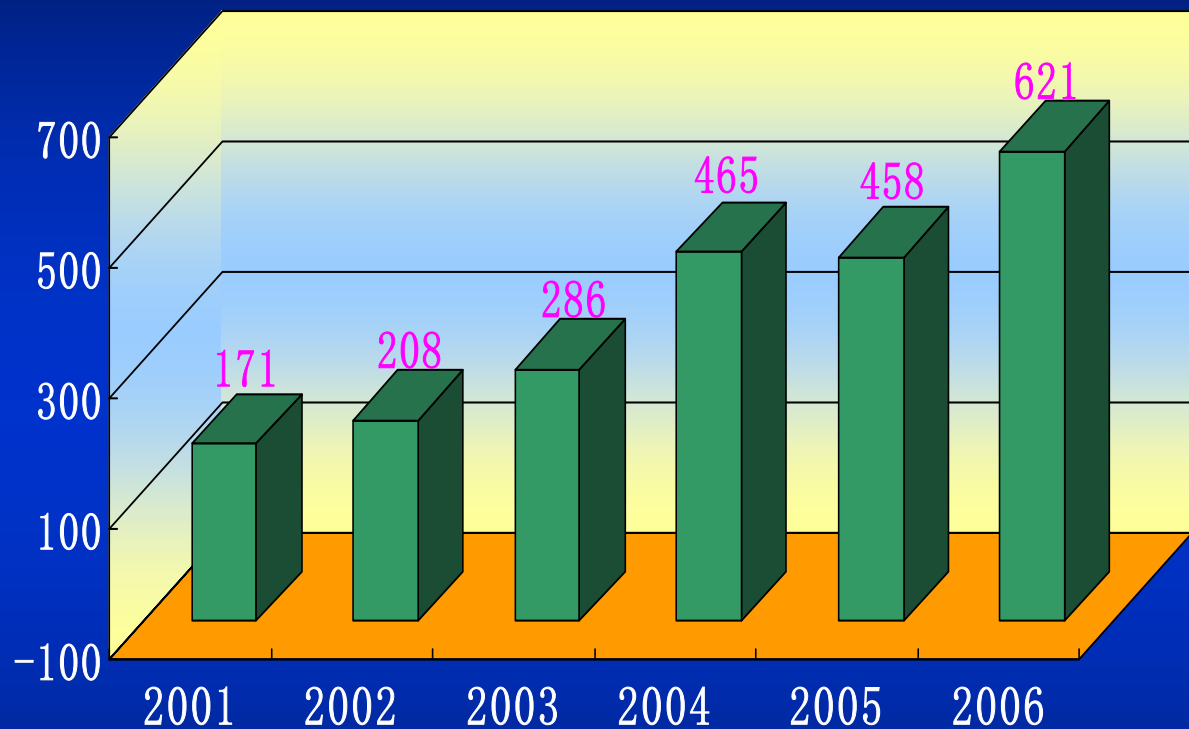


Consumption of Mn ore



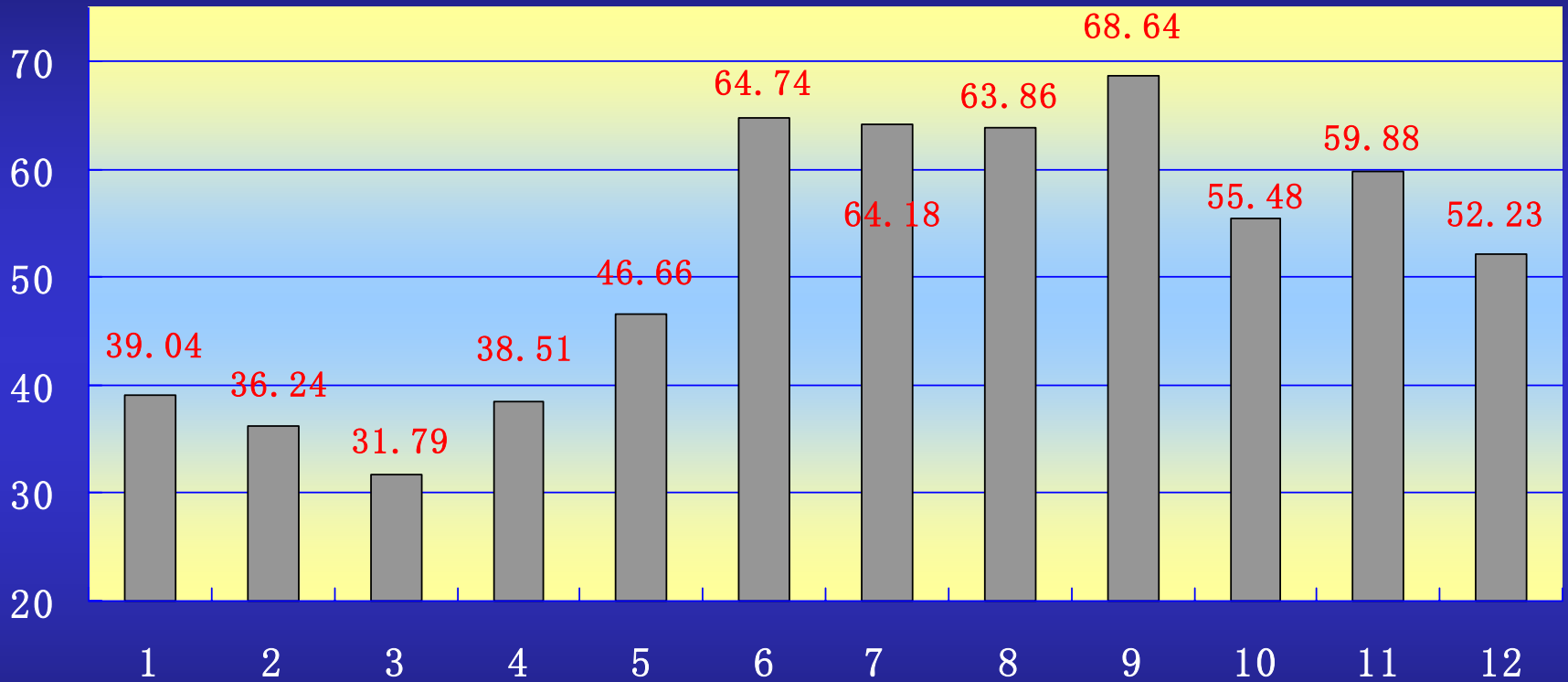
- **3、 Mn import**
- **Quality and quantity can not meet demand,**
- **High increase in Mn Mine import**
- **6.21 billion tons imported in 2006,**
- **Amounts to 40% of global deal,**
- **Largest Mn import country**

Imported Mn quantity and supplier /10 thousand t

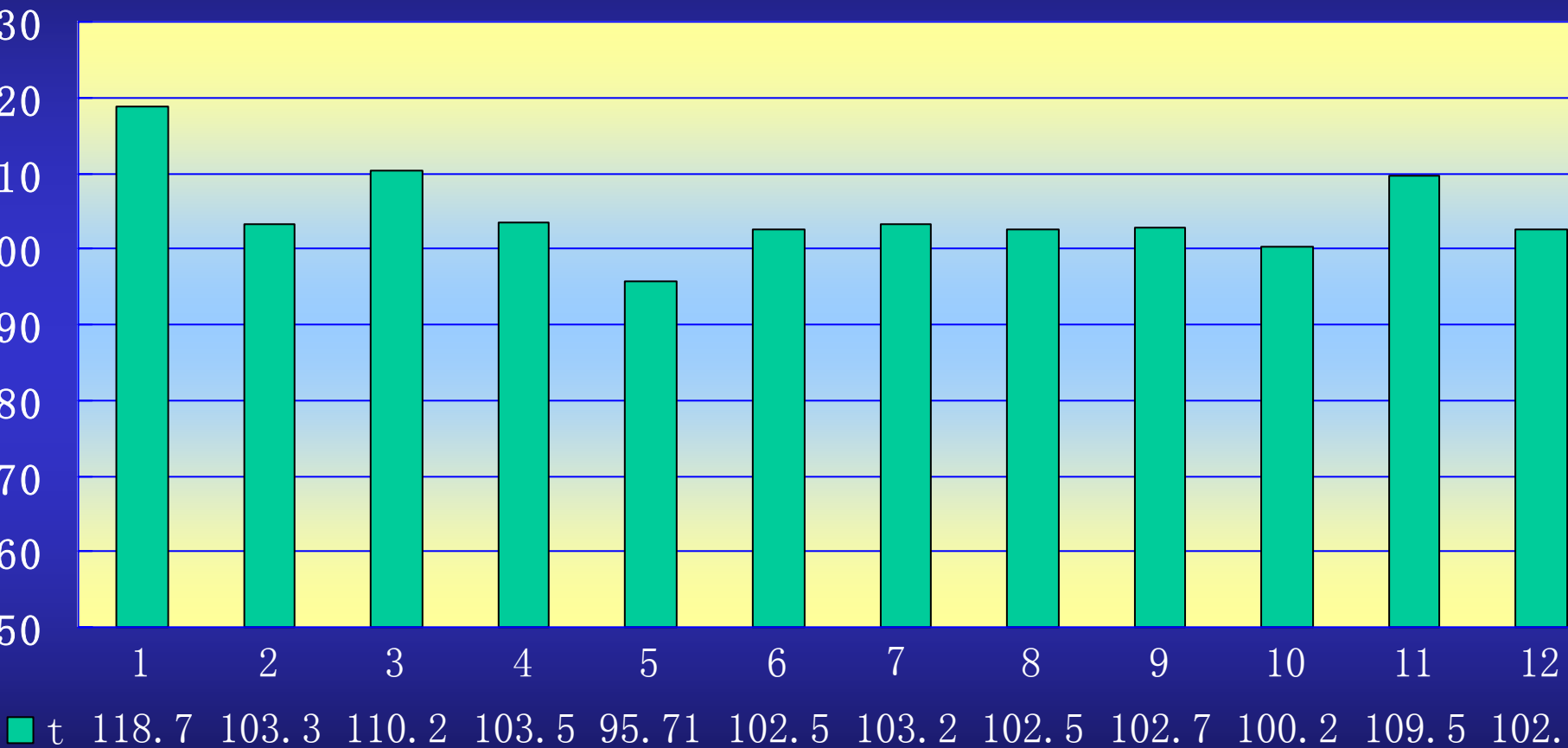


- supplier(10 thousand t) :
- Australia: 266.84
- Gabon: 121.03
- South Afric: 92.73
- Ghana: 58.45
- Brazil: 41.08
- India: 10.97
- Vietnam: 7.24
- Burma: 5.77
- Indonesia: 4.2
- Kazakstan: 3.85

Monthly import of Mn ore/10 thousand t



Average price (us dollar/t)



■ t 118.7 103.3 110.2 103.5 95.71 102.5 103.2 102.5 102.7 100.2 109.5 102.5

3、 Achievement and contribution

1、 rich Mn slag

2、 EMM;

3、 EMD;

4、 Mn Ore Outlook in 2007

several factors to influence Mn ore:

- 1)、 development of steel industry and output of crude steel;**
- 2)、 Mn ferroa-alloy industry;**
- 3)、 EMM;**
- 4)、 EMD**

- Mn is an important mineral, and is listed as one of the lacking minerals.
- Although China has large Mn reserve, quality is not very good.
- Rate of Mn that is available is low.
- lacking in Mn of good quality, rich creosote Mn and rich aminate Mn●

Development of steel industry will be influenced by supply of Mn resource and other rural material.

- Now the rapid development of steel industry has an increasing demand for Mn.
- For the present, the market is short of Mn supply although the industry develops rapidly.

5、 measures and advice

- Keep the principle of finding rich deposit, transfer poor mine and further procesing**
- Comprehensive developing, reasonable use and protection of Mn**
- Increase survey investment**
- Perfect the technology to make more efficient use of Mn**
- Importing Mn from all over the world;**
- To make sure that China Mn industry has a safe development**

Ending

- Mn deposit not satisfactory;
- More dependence on import;
- Technology and facility:
- Shift to big scope, high efficiency and energy saving
- Heading for decrease discharge, environment protection and comprehensive use;
- Mn ferro-alloy
- Shift to good quality, low slag, low danger element and high efficiency.

Thanks !