THE DEVELOPMENT OF THE SALT MAKING INDUSTRY OF CHINA UNDER THE GLOBAL FINANCIAL CRISIS

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Abstract: This test expatiates the characteristic of the salt industry development of China, which is the greatest salt production country in the world , how the three big salt making industrial belts and areas of different distribution of production area shaped and became more and more international gradually, while it is also facing some problems, for example the surplus capacity, the new project is very high, the contradiction between the high-speed development and the low-power, etc. It announces how the global financial crisis influenced on the Chinese Salt Making Industry.

Key words: Chinese salt industry, Global financial crisis, Development of salt industry, Soda, Chlor-alkali

1. CHARACTER OF CHINESE SALT INCREASE

In the history of China, salt, as the important citizens' foodstuff and the industrial raw material, has been occupied a decisive position in our national economy. In 1950 of early China, the table salt consumption occupied an important position, accounted for 88.90% of the total production of salt, while industrial salt just accounted for 6.20%. With the development of Chinese industry, the salt usage has changed greatly in it's structure, and the rapid growth of our salt demand just because of the high development of the two salt industries. In 1987 industrial salt amount has been more than table salt amount. In 1992 industrial salt amount has been up to 14.58 million tons, accounted for 63% of the total salt production, and in 1994 only caustic soda and soda industrial salt amount has been up to 66.70%. In 2004 industrial salt amount has been to 37.00 million tons, accounted for 81.90% of the total salt consumption, among them caustic soda and soda industrial salt amount accounted for 72.40%, and in 2008 industrial salt amount has been more than 57.00 million tons, accounted for 83.70% of the total salt consumption, among them caustic soda and soda industrial salt amount accounted for77.80%.

1.1. China has became the great salt production country

After we entered the 21 century, China salt industry has been stepped into the high-speed development stage, which is mainly benefitted from economic and DGP growth of China. Under the influence of the two salt industries, China became the number one salt production country in the world. Since the year of 2001, the average growth rate of the production of crude salt, caustic soda and soda has been over 10%, and after the year of 2005, the productivity of crude salt, caustic soda and soda has gained the first place in the world, separately. After that, rude salt production of China always occupied the first place in the world, and salt production has increased to 51.70 ten thousand tons in 2005. Fig.1 is the growth rates of the production and the salt amount of the two salts. Fig.2 is the production comparison picture of the main salt product countries in the world.

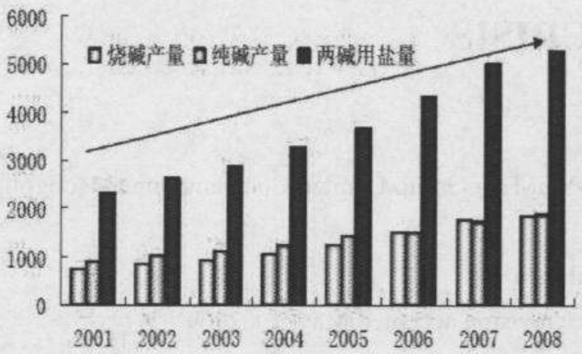

Fig.1 The growth rates of the production and the salt amount of the two salts

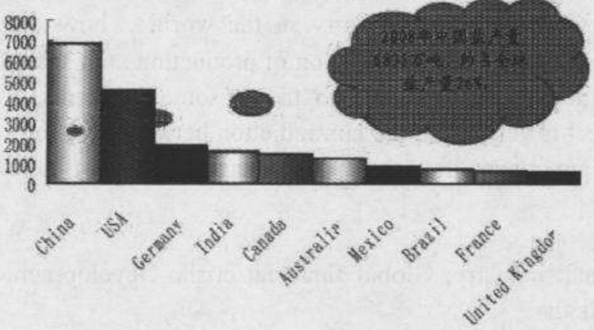

Fig.2 The production comparison picture of the main salt product countries in the world

1.2. The mid-west rises swiftly and violently

The 1999-2001 year, the Chinese crude salt capacity bog down, the output increased less, but, as a result of the crude salt reserve is sufficient, the salty supplies market is more stable than two alkali salts, and hasn't presented the phenomenon which the industry salt fell short of demand. In afterward in 2002, the country crude salt output achieves the peak over these past years, the price of salt went down by a large margin, many sea salterns had to switch to other production; At the same time, the national coast development zone's construction leads to lots of the salt fields was taken largely; Falls behind the big pen salt funds with the salty enterprise, majority of salterns (factory) in disrepair after many years, salterns haven't enough money to carry on the normal service and the technological transformations, resists natural calamities ability to weaken, and lead to the industrial salt isn't enough resources for the following insufficiency.

From 2004 to 2008, the Chinese

salt-making industry developed fast in middle and west , middle was 145.56%, west southwest and northwest was 90.83% and 93.62% speed growths, the north four big area along the sea and the East China area increased ranges as 55.44%, capacity increased from 29,400,000 tons to 4570 the ten thousand tons, expaned capacity 16,300,000 tons. Table 1 shows that, by comparing the distribution of Chinese salt-making industry region capacity, we can see development speeds of different locals.

Table 1 The Chinese salt-making industry region produces energyGrowth rate (unit: ten thousand tons)

Region	2004	2008	capacity increased	Increased range(%)
4 Major saltern areas of north China	2390	3590	1200	50.21
Saltern areas of south China	185	160	-25	-13.51
Jiangsu, Zhejiang and Anhui saltern areas in East China	550	980	430	78.18
Hunan, Hunan, Jiangxi and Henan saltern areas in Mid China	676	1660	984	145.56
Saltern areas in southwest China	469	895	426	90.83
Saltern areas in northwest China	470	910	390	93.62
Sum total	4740	8195	3405	72.89

From the distribution of the salt-making industry region capacity increased, main capacity increased distribute in middle Central China and south central the salt saltern areas, specially in provinces and so on Henan, Anhui, Hunan, Hubei, Jiangxi, by and the southwest Sichuan, Chongqing saltern areas and the northwest Xinjiang, the Qinghai lake salt area, northwest lake, capacity increased is be follows the soda ash and the chlorine alkali capacity increased ; The north five big salt coast areas capacity increased mainly in Shandong, but Jiangsu expands can by the Salt will primarily, the south salt area productivity is atrophying step by step.

1.3. Mineral well salt proportion rosing

In 2003 and 2004, Shandong, Hebei, Jiangsu and Tianjin and so on sea salt production area has encountered the storm unprecedented , the majority of salterns received the varying degree loss, the sea salt output have compared in 2002 to present the large scale drop, caused to present the supply take the sea salt as the leading product Chinese salt industry market to be after 2004, because the marine product fish breeding and poultry raising slides, the Shandong part area of cultivation produces a different product the crude salt, the capacity have to rise again, but further expands the easy childbirth to be able the potential was already limited. But after this, salt wells unceasingly large-scale installment, causes the vacuum salt vigorous development, a round beyond redemption.

In recent years the Chinese domestic crude salt consumption quantity increases suddenly, increased from 2001 3410 ten thousand tons to the 2008 year 6810 ten thousand tons, increased 3400 ten thousand tons, grew 99.7%. But crude salt are producing.

And the production of crude salt also increased from 34.45 million tons to 68.35 million tons, the salt production increased 33.9 million tons, an increase of 98.4%. The phenomenon of inadequate capacity in 2003 resulted a rare change of the industrial salt supply and prices in the history. The industrial salt price of 2003-2004 years quadrupled in 2002. The high price of industrial salt, the more stimulated the large-scale expansion of inland well salt.

Table 2 The rate of rise for various salterns from 2004 to 2008 (unit: ten thousand tons)

Name	Sea salt	Well rock salt	Lake salt	Sum total
Production energy of 2004	2715	1565	460	4740
Production energy of 2008	3835	3490	870	8195
Rate of rise %	41.25	123.00	89.13	72.89

The period of 2004 – 2008, the growth rate of the well rock salt is biggest, expands 1925 ten thousand tons, the rate of rise achieve 123%, the rate of rise is astonishing. Below are various salts plants the structural change statistics:

Table 3 Change tendency of Chinese salt-making industrial production capacity structural adjustment (%)

Year	Sea salt	Lake salt	Well rock salt
1991	65.1	16.9	18.0
2003	63.1	10.5	26.3
2004	57.8	9.6	32.6
2005	57.7	8.2	34.1
2006	52.0	7.9	40.1
2007	48.7	8.8	42.5
2008	46.8	10.6	42.6

From 1991 to 2008, during this 17 years, the Chinese salt-making industrial production capacity structure adjusted the entire change tendency, the structure proportion of the sea salt and the lake salt is in the reduction, reduced 18.3% and 6.3%, separately, but lake salt proportion in the recent two years started to rise again; But the proportion of the well rock salt produces enhance unceasingly, increases 24.6%, and expands in 2006 the most quickly, to 2008, because comes under the whole world financial crisis's influence, the expands energy speed of the well rock salt have to slow down, from now on the economic situation will change for the better, the well rock salt will also continue to expand energy, several years later, Chinese well rock salt's productivity will surpass the sea salt productivity.

1.4. Three big salt-making industry belt and base formation

China's salt industry resources are very rich, the distribution is broad, 23 provinces, areas and cities have the salt. According to the technique of production discrimination, the industry salt may divide into the sea salt, the well salt and the lake salt. Among These three industry salt, the sea salt Produces energy as well as the amount used is biggest, the well salt next best, lake salt smallest.

The China sea salt's production according to the coastline north the Liaoning Yalu River mouth, winter solstice Guangxi's Beilun River the mouth, the span 18000 kilometers, is distributing the hundreds of sea salt Production enterprises. According to the regional classification, take Yangtze River as the Boundary, north of Yangtze River's Liaoning, Hebei, Tianjin, Shandong, Jiangsu and so on. These five salt areas are the north salt area. But south of Yangtze River's Zhejiang, Guangdong, Guangxi, Fujian, Hainan and so on. These five areas are the south sea salt area. Because the climate and the shallow seas and tidelands conditions of the north sea salt area are good, it is suitable to the Large-scale production of sea salt, so it is the main body of Chinese sea salt production.

The Chinese well rock salt's production begins the Qin Dynasty in more than 2000 years ago, well rock salt and ore deposit distribut 18 provinces, areas, cities, mainly concentrates in Henan, Sichuan, Hubei, Hunan, Jiangxi, Sichuan, Chongqing, Yunnan, Jiangsu, Shandong, Anhui and Shanxi. Lake salt production area distributes in Inner Mongolia, Qinghai, Xinjiang, Shanxi and Gansu and the other northeast area.

After the reform and opening up, China's salt industry has developed continuously, and has formed three main industrial belts and the base salt where the production of the region is different.

Fig.3 Production capacity of various saltern areas

2. THE INTERNATIONLIZATION OF CHINESE SALT INDUSTRY HAS GRADUALLY INCREASED

Before the year 2003, China's import and export of salt was mainly export-oriented, but after the year 2004, the situation has changed totally, the amount of imports has exceeded exports, thereby speeding up the China's process of internationalization in salt industry.

2.1. China's imports of salt has raised the degree of Internationalization

The import of foreign industrial salt, has raised China's level of the Internationalization, the imports salt has played a key role in balancing the China's supply of salt market, especially in year 2004 and 2005, China's salt market has entered into the period of demanding-over-supplying; In addition, the imports of crude salt has given a positive support to enterprises of chlorine salt in coastal areas of the Yangtze River in the south. From the diagram of China's import and export salt situation, we can find that the number of China's imports has been a slow and continuously increase trend from the year 2001 to the year 2004. And the annual import production was less than 40 million tons .But it suddenly increased to 2.13 million tons in the year 2004, especially reached 4.21 million tons that broke the record in 2005, and it's 3 times more than the import of 2003, which shows that China's salt market also needs an appropriate amount of the import of industrial salt to balance the market supply during the period in which the production of China's crude salt has stagnated and under the influence of the Two alkali industry's rapid expansion. As the improvement of the situation in the second half of the year 2005, the phenomenon of the strength of import crude salt has weakened.

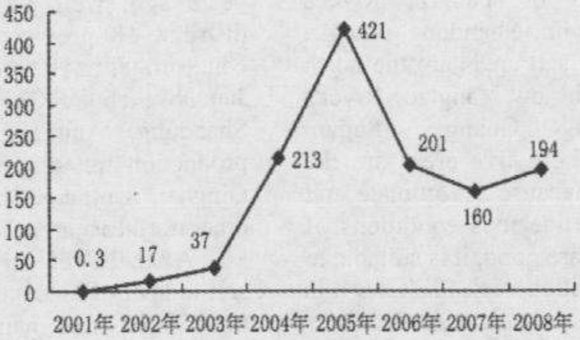

Fig.4 Trend of imported salt in China

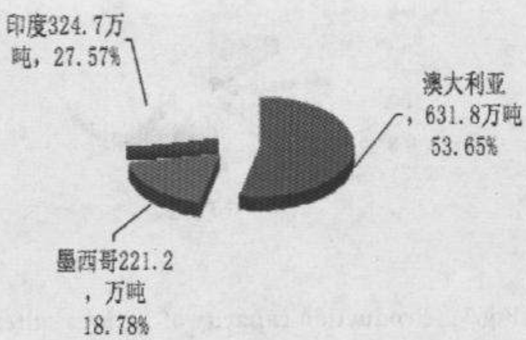

Fig.5 Composition of imported salt in China from 2004 to 2008

The main importing countries of China's industrial salt are Australia, India and Mexico, but under the normal conditions of the situation, the main importing countries of China's industrial salt are Australia and Mexico, especially Australia, while India is only a supplement. China's import of crude salt concentrated mainly in the chlorine salt factories, some soda manufacturers also began to import crude salt, but with an adequate supply of China's domestic crude salt, the process of crude salts of soda factories will come to an end. This is because the price of imported salt is higher than the price of crude salt in China and the costs of crude salt in soda manufacturers have the leading place.

2.2. Stable trend of Chinese import

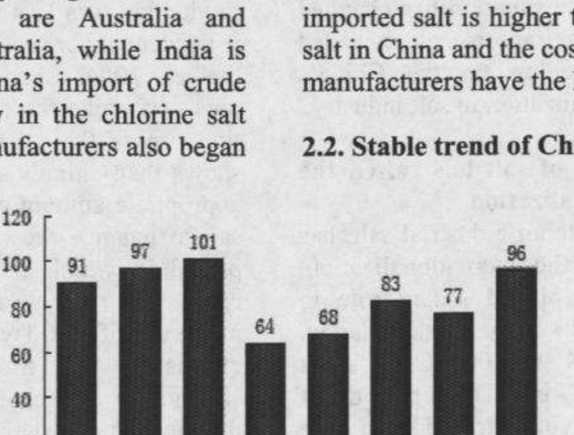

Fig.6 Trend of Chinese import market

3. THE PROBLEMS CHINA FACES IN SALT MAKING INDUSTRY

3.1. Over production

Chlorine and soda industries were increasing sharply from 2004, resulted in source competition between salt-making and two soda enterprises in start salt projects, leading to the expansion of productivity. Thus the production capacity exceeds demand and over-production phenomenon revealed.

Table 4 Gap between production and demands (unit: ten thousand tons)

Year	2004	2005	2006	2007	2008
Demands	4515	4950	5628	6242	6810
Production capacity	4740	5806	7099	7760	8195
Gap	225	856	1471	1518	1385

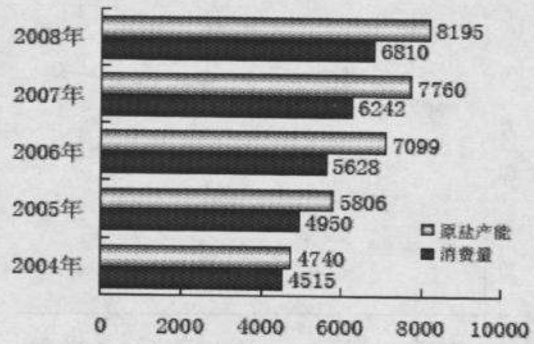

Fig.7 Over-production of Chinese crude salt making

From 2005 to 2008, the productivity over capacity is 8.56 ten thousand tons, 14.71 ten thousand tons, 15.18 ten thousand tons and 13.85 ten thousand tons, respectively.

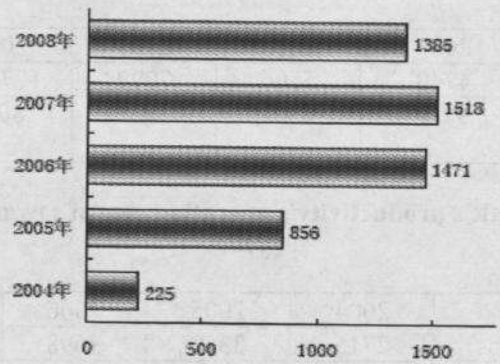

Fig.8 Production capacity exceeded

3.2 The rapid growth make the operating rate lessen further

In the process of Chinese salt industry's rapid growth, the operating rate lessening has appeared. The chart below is about raw salt productivity and operating rate in the recent 5 years.

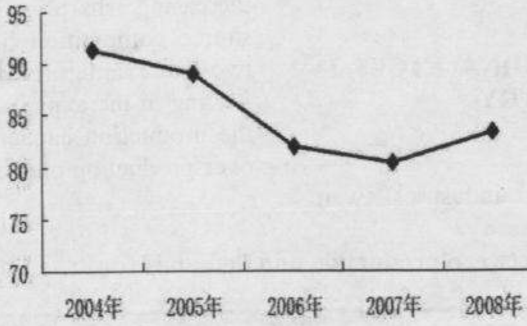

Fig.9 Trend of Chinese raw salt operating rate Raw salt operating rate(%)

The lake salt operating rate tends to go up, while the sea salt operating rate tends to cut down, as well as the well and rock salt operating rate.

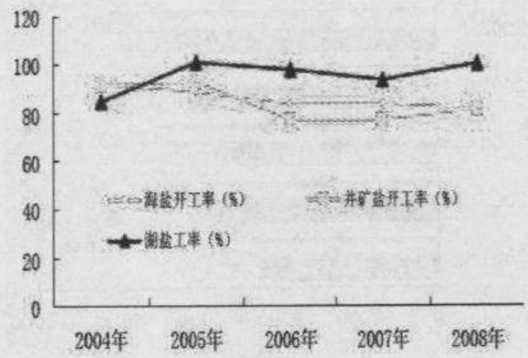

Fig.10 Varieties of Chinese salt operating rate trend

Table 5 Raw salt productivity and operating rate in recent 5 years (unit: ten thousand tons)

Name	2004	2005	2006	2007	2008
Raw salt (10^4 t)	4740	5806	7099	7760	8331
Raw salt operating rate (%)	91.3	89.0	82.0	80.4	83.4

Table 6 Varieties of salt's productivity's operating rate of saw manufacturing in recent 5 years

Year	2004	2005	2006	2007	2008
Sea salt (ten thousand tons)	2715	3350	3698	3778	3835
Sea salt operating rate (%)	92.1	88.2	83.7	83.7	81.9
Well and rock salt (ten thousand tons)	1565	1980	2848	3300	3490
Well and rock salt operating rate (%)	91.8	92.6	76.4	76.7	80.9
Lake salt (ten thousand tons)	4.60	4.76	5.61	6.86	8.70
Lake salt operating rate (%)	84.7	101.0	98.0	93.3	100.0

The sea salt operating rate is influenced by meteorological condition heavily, the well and rock salt operating rate is influenced by market, coal and transport deeply, while the lake salt's output is decided by sales volume, and it's operating rate is rather high.

3.3. Capacity expansion item develops rapidly

The peak of Chinese salt industry apeared in 2005 and 2006, capacity has expanded by 23.59 million tons during the two years. From 2004 to 2008, capacity has expanded 7.61 ten thousand tons on average every year.

Table 7 2004-2008 raw salt capacity expansion statistical chart (unit: ten thousand tons)

Year	2004	2005	2006	2007	2008	2009
Capacity expansion	350	1066	1293	661	435	3805

From 2005 to 2008, the capacity expanded by 34.55 ten thousand tons, there are sea salt 11.20 ten thousand tons, well and rock salt 19.25 ten thousand tons, lake salt 4.10 million tons inside it.

Make China crude salt productive capacity improved a lot, in the year of 2008, the total of crude salt productive capacity of China (including the liquid salt and the chemical enterprise' products that produce and market all by themselves) has reached to 81.95 ten thousand ton.

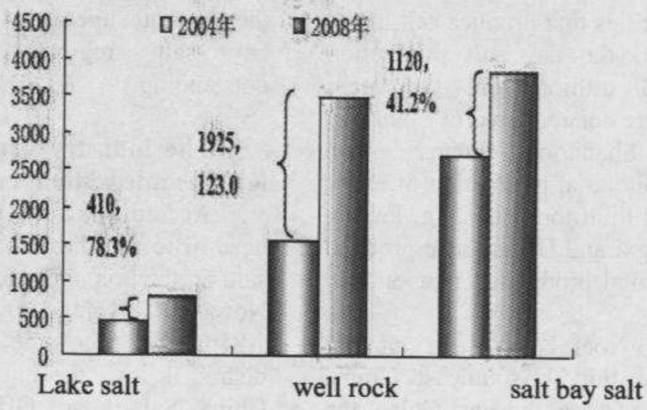

Fig. 11 2004-2008 the rising scope of varieties of salt

3.4 The productivity capacity in an unreasonable distribution

In China the productivity capacity distribution is unreasonable, some provinces don't produce salt due to the lack of salt resources or other reasons, while the coastal areas cities such as Liaoning, Hebei, Tianjin, Zhejiang, Fujian, Guangdong and Guangxi and so on, that even though there are salt works, can't satisfy the need of the market supply.

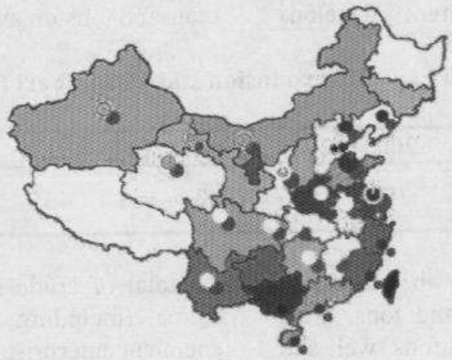

Fig.12 The crude productivity capacity distribution

Along the coast of China, there are ten provinces, areas, cities that produce salt in the use of sea water, the bay salt production capacity is 38,3 million ton, the main production areas are concentrated in Liaoning, Tianjin, hebei, Shandong, Jiangsu, five provinces, cities, the total production of every year is about 30million ton. Zhejiang, Fujian, Guangdong, guangxi and Hainan also produce bay salt, but the total production is about 1.6 ten thousand tons.

China well rock salt are mainly distributed in the middle southeast China, namely the Middle China, the East China, the Middle South China, the South China and the Southwest China, have formed the vocuum purified salt and the liquid salt productivity capacity 34.9 ten thousand tons.

China is one of the more lake salt countries, the lake salt is mainly distributed in the northwest China, the main production is Neimeng, xinjiang, Qinghai and so on, which have formed the productivity capacity of 8.1 ten thousand tons, bay salt has a great production proficiency and has the characteristics of big reserves and easy mined.

The southwest lake's low cost superiority is weaken by the logistics cost, the well rock stress the resources superiority more, ignore the market superiority (the contradiction of bay salt' regional supply balance is outstanding.)

3.5. The industry concentration degree is low, the integration trudges

According to the statistics of China salt head office, in the year of 2007, there are 443 salt production factories in the countrywide. Now the average production capacity is 1.85million ton, the industry concentrate degree is low, the biggest China salt group, China Salt Lead Office are at the 17.2 percentage of the countrywide productivity capacity. The front three salt groups are at the 25 percentage of the countrywide productivity capacity, the front five salt groups are at the 30 percentage of the country wide productivity capacity. The technology forerunner of leading enterprise of the industries is not the international advanced, technology creativity capacity is week. Hundreds of salt productivity is distributed in the wide areas of countrywide, also the manufacture factories are subordinate to difference industry and enterprise quality, the integration is difficult.

Table 8 Statistics of productive enterprises

Productive power (ten thousand tons)	The amount of productive enterprises	Instruction
>60	33	sea:13, well:17, lake:3
30-60	30	sea:19, well:9, lake:2
10-30	67	sea: 44, well:16, lake:7
<10	313	sea:281, well5, lake:27
Total	443	sea:281, well5, lake:27

4. THE GLOBAL FINANCIAL CRISIS HAS SOME INFLUENCES ON THE DEVELOPMENT OF CHINES SALT INDUSTRY

4.1. influence of soda ash and downstream chlorine alkali

The two types of alkali had a sharp rise in production and salt usage amount, the usage amount of salt was also increasing in a wide range, the average increasing speed of the four years was 14.78%, due to the influence of global financial crisis in 2008, the increasing in production and salt usage amount of the two alkali is was weaken, the increasing speed of salt usage amount suddenly dropped when compared with the past four years, was only 6.08%.

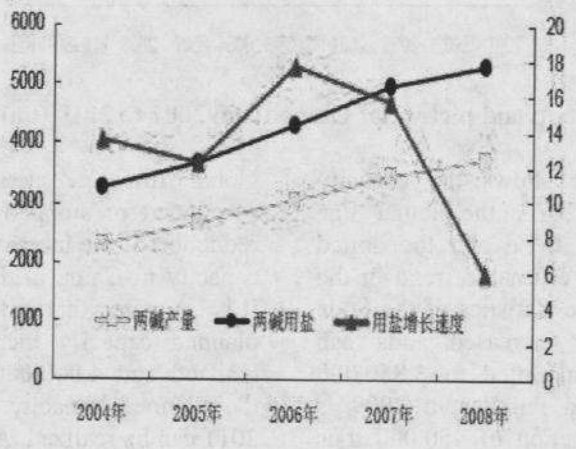

Fig.13 The increasing speed of the two alkalis' production and salt usage amount

According to the indication of the slowly Chinese economic recovery, we can have a optimistic estimate that Chinese salt market can not have a good change in 2009, predicting that it will have a relatively good recovery phenomenon in 2010.

Table 9 The optimistic prediction of the usage of soda ash and caustic soda from 2009 to 2010 (unit: 10 thousand tons)

Year	2006	2007	2008	2009	2010
Production of caustic soda	1512	1759	1852	1850	1950
Production of soda ash	1530	1725	1881	1900	2000
Production of the two alkalis	3042	3484	3733	3750	3950
Salt usage amount of the alkalis	4320	4996	5300	5320	5600

Predicting in a optimistic way, the production and the salt usage amount of soda ash and caustic soda are still increasing from 2009 to 2010, comparing with 2008, both the production and the salt usage amount increased by 0.4% in 2009, the increasing speed was very slow comparing with 2009, both the production and the salt usage amount also increased by 5.3% in 2010, presenting a trend of slowly increasing. The predictive result of soda ash's capacity trend in the future 2 years is as follow.

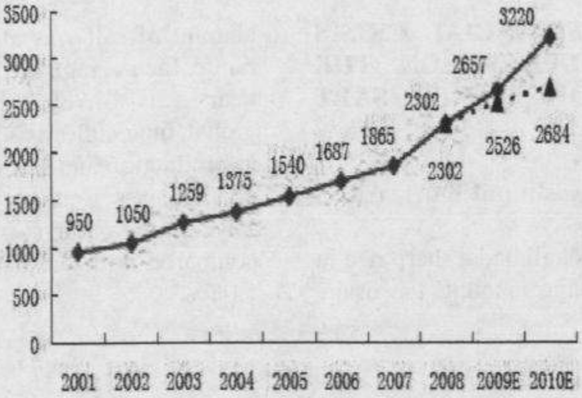

Fig.14 Soda capacity trend picture of China from 2001 to 2010 (unit: ten thousand tons)

The above figure shows the capacity trend from 2008 to 2010, the actual line indicating the planned trend and the dotted line demonstrating the estimated trend in the future. According to the statistics of the Soda Ash Association, the increased soda ash production capacity amounted to 3,850,000 tons and the estimated number in 2009 is 4,000,000 tons (a reduction of 450,000 tons owing to the transference and thus the net increase is 3,550,000 tons). The planned capacity increase in 2010 and 2011 is 8,300,000 tons. Due to the influence of the global financial crisis, some projects are suspended or stopped, which will lead to a reduction of the increased soda ash production capacity in China in the following two years. It is estimated that only 2,240,000 tons of the planned capacity increase in 2009 can be realized and 4,000,000 to 5,000,000 tons of the planned capacity increase in 2010 and 2011 can be realized. At that time, the national production capacity of soda ash will amount to over 30,000,000 tons. The following figure shows the estimation of the production capacity trend of caustic soda.

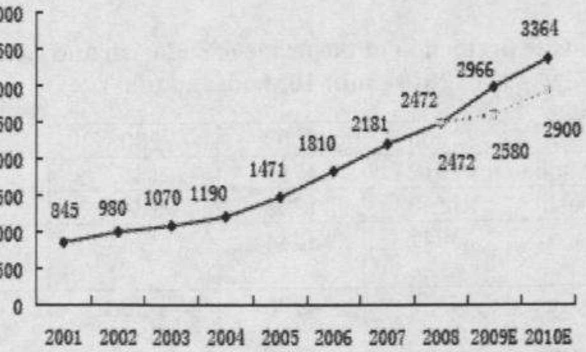

Fig.15 Production capacity trend of caustic soda (unit: ten thousand tons)

4.2. Influence of domestic economics

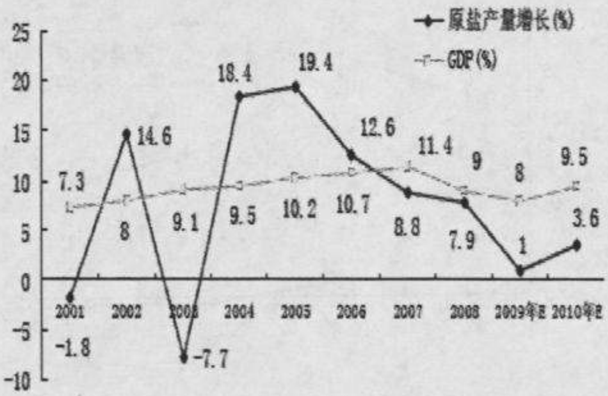

Fig.16 Relationship of crude salt increase and GDP by positive estimate

4.3. High number of under construction and to-be-constructed projects

Table 10 2008-2010 salt expansion distribution

Year	2007	2008	2009	2010
Sea salt	3775	3835	3810	3780
Lake salt	685	870	1015	1150
Well salt	3300	3490	3575	3735
Total	7760	8195	8400	8665
Expansion	661	435	205	265
Increasing rate (%)	9.3	5.6	2.50	3.15

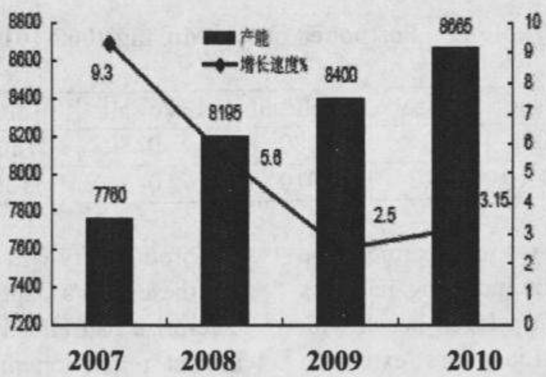

Fig.17 Crude salt expansion and distribution during 2007-2010

China's crude salt production capacity in the situation which the economy slides, because production capacity surplus, send two alkalis the influence which the exhibition slows down, in the future several year rate of rise will reduce greatly, year rate of rise insufficient 5%.

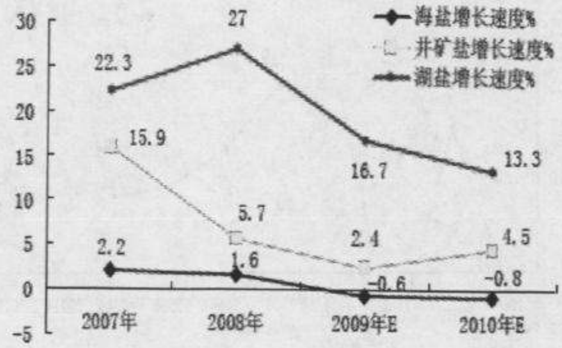

Fig.18 3 Increasing rate of production capacity for kinds of salts during 2007-2010

Because the coastal area has not had the shallow seas and tidelands to be possible to expand the solarization saltern, in addition the open areas and the industry occupies the place, solarization sea saltern productivity is withering gradually, in the future will present the negative growth the phenomenon. The well rock salt two alkali and economic development's influences, two year rate of rise also will receive in the future the influence, the rate of rise slows down obviously, year rate of rise also insufficient 5%. The northwest lake salt situation is quite special, present in the soda ash which and the chlorine alkali project constructs in 2009 and in 2010 releases the output, therefore the speed of grow still above 13%. In 2008, the four necessary new shaft building rock salt project in Henan (gathers to count 180 ten thousand tons) is because the soda ash and the chlorine construct the project postponed construction to construct slowly. 2009-2010 year postponed project amount 1130 ten thousand tons is because of the soda ash, the chlorine alkali project postponed construction and the economy not booming postpones to production capacity.

Table 11 Postponed project during 2008-1010

Issue	Sea salt	Well salt	Lake salt	Total
2008	0	180	0	180
09-10	220	910	0	1130

These plan to construct in the project, the sea salt exposes to the sun including Jiangsu's 100 ten thousand ton ore halogen beach with Shandong, Hebei, the Liaoning's extension plan, whether can obtain carries out, must look at the market, the fund situation; But well ore the salt mostly is forms a complete set for the soda ash and the chlorine alkali project, once the soda ash and the chlorine alkali project continues to construct, these projects will obtain carry out, at that time, China's crude salt productivity will continue too much. After the these year's baptism, China's salt-making enterprise had already learned along with the market regulation production, from now on the China crude salt's production and marketing basic will be balanced, every year's output will be also more than the consumption quantity 100-200 the ten thousand tons, in addition 200 ten thousand ton about import salt's supplement, will supply the market every year will tend to be stable.