

HOW TO SELECT PRODUCTION BASE FOR SALT AND SALT CHEMICAL INDUSTRY

Chang Zhonghong Yang Daobin

Henan Puyang Administration of Salt Industry

ABSTRACT: The article conducted feasible research on the construction of production base for salt and salt chemical industry, followed by excellent measures and suggestions, which has positive effect on the development of the salt and salt chemical product in China

KEYWORDS: chose, salt and salt chemical industry, production base

INTRODUCTION

Salt, in addition to be treated as condiments, is also the major raw materials of chlor-alkali industry. Salt is worthy of being called as the "mother of chemical industry" for the chlorine and alkali can be used to produce tens of thousands of industrial products. It is estimated that chlor-alkali per ten thousand tons can create industrial output value of RMB 0.5-0.7 billion. The alkali output reflects, to a certain extent, the industrialization level of a country. Impacted by financial crisis, the economies over the world have been affected to different degrees. From September 2008, working ratio of chlor-alkali enterprises has fallen, the demand for crude salt shrieked. Crude salt is a product dependent on resource and scale to get benefits. If added value and sustainable development are desired, integration process based on crude salt should be accelerated. Efforts should be reinforced to the development of salt chemical industry to form fine chemical industrial chain oriented to deep-processing of crude salt, chlor-alkali, as well as the downstream products. It also have to stretch the industrial chain, particularly giving much more attention to the development and production of downstream

intermediate product of high added value and fine chemicals, which will form a developmental pattern integrated the upstream, midstream and downstream industries.

The economy will still develop, and the promising projects will still have to be launched. Everyone believes that the financial crisis will pass away sooner or later. We are glad to see that governments around the world are making positive contributions to this. Well, how to select a production base while choosing a good project?

I. TO SELECT A PRODUCTION BASE, A COUNTRY SHOULD BE FIRST CHOSEN.

As the oil price and the pattern of demand constantly change, the devices out of style are weeded out, and the concept of environmental protection goes forwards, the total capacity in chlor-alkali industry in developed regions such as Europe and America is declining. For the demand for chlorine and alkali products in Asia is rather brisk, most newly-built devices are dispersed over Asia, among which China will take up the maximum share. In 2007, the salt output in China was 59,18 million tons, their use for

salt chemical industry amounts for 73% while for edible purpose 16% and others 11%.

The salt chemical industries in China use salt as the raw material are primarily two major industries, soda and chlor-alkali (commonly referred to as "Two Alkalis"). The development of them stimulates the growth of salt industry. Thus China has formed an industrial pattern of salt chemical industry with the soda and chlor-alkali as the leading, coexisting with the development of downstream products.

Over these years, the capacity of the soda in China has maintained a growth rate over 10%. The capacity in 2007 was about 19

million tons, and the output was 17.24 million tons, accounting for 35% of the world output, which makes China the real largest soda producing country. The exports maintains at 1.7-1.8 million tons, and the imports at about 1 million tons.

As seen from the table 1, among the soda consumption in China in 2007, glass industry is the largest downstream user, and the development of other sectors also make contribution to the growth of soda consumption

Coordination of supply and demand of soda in China in recent years ten-thousand tons

Year	Soda Output	Soda Imports	Soda Exports	Apparent Consumption
2001	906	7	110	803
2002	1012	30	115	927
2003	1080	30	120	990
2004	1246	20	143	1123
2005	1410	10	170	1250
2006	1540	14	181	1373
2007	1724	4	170	1558

There are nearly 200 caustic soda enterprises in China now, and the number of the enterprises with annual output over 2 million tons is about 20, which amounts for 30% of the national total output. Therefore, the degree of concentration in caustic soda industry is still low. In the recent years, the domestic caustic soda market shows a situation that "ion-exchange membrane is

better than septum, and higher concentration is better than lower concentration". The present capacity of making caustic soda by ion-exchange membrane in China takes up approximate 40% of the total capacity. For most newly-built devices, it adopt ion-exchange membrane technique. It is estimated that, in 2010, the capacity of this method will reach 50% and above.

Supply and demand of caustic soda in China in these years ten-thousand tons

Year	Output/	Net exports/	Apparent consumption/ Consumption/%	Growth Rate of Apparent
2001	738.1	57.1	681.0	
2002	822.7	26.4	796.3	16.9
2003	939.9	26.8	913.1	14.7
2004	1060.3	25.2	1035.1	13.4
2005	1239.0	80.7	1158.3	11.9
2006	1511.8	130.4	1381.4	19.2
2007	1759.3	144.2	1615.1	16.9

The downstream users of caustic soda are relatively dispersed. The rapid

development of the three largest downstream industries, chemical raw material,

paper-making and textile has promoted the balance of production and sale of caustic soda.

China currently has more than 200 kinds of chlorine products with main kinds of 70. For the products consuming chlorine, in addition to the PVC which has larger demand that may be companied by large scale matching production plant, other downstream products are mainly subject to fine chemical products, which has limited scale of single plant with high technology and added value,

it is also a weak link of the chlor-alkali industry.

It is expected that among the products consumes alkali, the global demand for PVC may grow at 4% in the coming 5 years and China may still maintain 10%. In coming years, China will take up 70% of the newly-added capacity of PVC over the world. In 2003, the domestic PVC output was 4.007million tons, and had reached 9.717 million tons in 2007.

Supply and demand of PVC of China in recent years ten-thousand tons

Year	Output	Imports	Exports	Apparent consumption
2001	295	250.8	3.6	542.5
2002	338.9	225.2	3.8	560.3
2003	400.7	229.2	4.53	625.4
2004	503.2	211.0	4.3	709.9
2005	649.2	166.1	14.9	800.4
2006	823.8	145.2	49.9	919.1
2007	971.7	130.4	75.3	1026.8

According to the estimate calculation of State Statistical Bureau, in the first three quarters in 2008, China's GDP was RMB 14,147.7 billion, growing by 10.7 percent over the same period of last year. The trade surplus continued to increase. The price level was basically stable. The income of both urban and rural residents maintained double-digit growth. The national economy generally showed a development pattern of rapid growth, sound performance and high quality, and a good start of "the 11th Five-year Plan may be expected to be realized. Against the world financial crisis, such achievements in China had gotten benefit from the good combination of social stability, macro-control policies and market economy. Building salt chemical projects in China is a judicious choice of enterprisers.

II. TO SELECT PRODUCTION BASE, MAKE SURE WHETHER THE PROJECT CONFORMS TO NATIONAL INDUSTRIAL POLICES

Industrial polices are important aspects

of government's macro-economic control polices under the market economy, which are the sum of all policies to planning, guidance, promotion, adjustment, protection, supporting and restriction in the formation and development of industry made by the government for achieving certain economic and social goals.

Protecting and supporting some industries and adjusting and reorganizing industrial systems are aimed to improve resource allocation, achieve economic stability and growth, strengthen international competitive capacity, improve and protect environment. In order to achieve these economic or social goals, industrial polices require the government to exert positive or passive intervention to producing and trading actives of every industry and enterprise, directly or indirectly intervening in the forming and mechanism of market. Understanding and complying with national industrial policies is helpful for enterprises to conduct scientific decision and standard production, and is helpful to determine the target and direction of development, which

also is helpful to survive and develop under the guidance of them.

In November 2005, State Development and Reform Commission issued the Guiding Opinion on Adjusting the National Salt Industry Structure, which demands to extend industrial chain, adjust product structure, develop high-added-value products and improve overall efficiency of industry with the goals of end product of salt by technical innovation and structural optimization. In April 2007, Evaluation Index System of Cleaner Production of Caustic Soda/PVC was issued and implemented. The index system gave a clear definition of resource and energy consumption index in caustic soda and PVC industry, pollutants-generating index and energy comprehensive utilization index, guiding and pushing Caustic Soda/PVC producers to carry out cleaner production in accordance with law, improving level of resources utilization, reducing and avoiding producing pollution, and protecting and improving environment. In December 2007, Accession Qualification in Chlor-alkali (caustic soda, and PVC) Industry was implemented. It specified an access value in terms of energy consumption and environmental protection and set up a high start scale for newly-built and expanded plants: new PVC project of calcium carbide process and its matching caustic soda project are not to be built any more in east area in principle; new plants of PVC of calcium carbide process and caustic soda are prohibited to be built within 2km outside of the boundary of city planning area; the start scale of newly-built plants of caustic soda and newly-built and expanded PVC plants shall be 3 million tons/year; the production scale of single plant of cement production with calcium carbide slag must be 2000 tons/day; and corresponding regulations about safety, health, environmental protection and energy consumption were also given. In June 2008, the state compulsory energy consumption standard "Energy Consumption Ceiling of per Unit of Caustic Soda" matched with Energy Conservation Law of the People's Republic of China was implemented, which provides stipulations on calculating limit, basic requirement, calculating method and

management requirements of energy consumption ceiling of per unit of caustic soda with electrolytic process (diaphragm process, ion-exchange membrane process). The implementation of these industrial policies and regulations is good to the overall design, standard production and management of enterprises and is good to their improvement of competitive power and vitality.

III. TO SELECT PRODUCTION BASE, THE LOCAL INVESTMENT ENVIRONMENT SHOULD BE CONSIDERED.

"Swimming fish plays in surging waves, and twittering phoenixes perch on Chinese parasol trees. Healthy, orderly and prospering economic environment is the external factor for the survival and development of enterprises. A safe, stable and harmonious social environment is the essential condition for it. What waves the fish play with and where the phoenix perches depend on whether the local social and economic environments are suitable for the long-standing survival and development of enterprises? Any investment is always made in a particular space and time and needs certain conditions. The sum of these space and time and conditions constitute an investment environment, which covers a large range and many factors is an entity of contradiction with interaction of various factors. A fine investment environment at least should consist of clean and efficient government affair environments, democratic and fair legal environments; normal and honest market environments, stable and orderly social environments, healthy and upward cultural environments and comfortable and beautiful environment.

Nowadays the economic competition in the world becomes increasingly fierce, economic development has more and more requirements for investment environment, thus the function of which becomes increasingly important, especially the soft environment, which has become a key factor for a country or region to enhance the attraction for outside and improve the market

competition. The economic competition between countries and regions is always manifested by competition of soft environment. Any place which has political stability, perfection of legal system, social civilization, preferential policies, satisfying service and high working efficiency will attract investment, qualified personnel and techniques which will push the instant development of local economy. Otherwise, it will lose the opportunity to develop, making oneself to be fallen behind. Therefore, the city which will be selected as the production base should be one that has comprehensive influence in the country or province and should be of certain famous. Besides, the government decrees in the city shall be smooth. The information and communications is well developed. The society is stable and harmonious. The government personnel are diligent in serving the people. The people are well settled, and the live be affluent. In addition, the economic structure of the city should be reasonable. The economic growth is sound with new points of economic growth. The education there is developed. Population quality is higher. There are also good reserves of technical human resources. All of these factors will have certain influence upon the long lasting development of enterprises.

IV. TO SELECT PRODUCTION BASE, THE SUSTAINABLE DEVELOPMENT CONDITION IS AN IMPORTANT FACTOR TO BE CONSIDERED.

The sustainable development conditions of local economy reflect the development prospects of the enterprises in this region.

First consideration is to investigate the service awareness of the local government. The government shall be responsible for the people's livelihood, resources and local development. The local government should set up the idea to serve the people, improve the governing efficiency and the capacity of working staff for servicing people. They have to abolish the confirmed habit of "official standard" and thinking set of "official is official". They had to establish the political achievement concept of doing practical things, pursuing practical results and seeking

performance, and carry forward the fine style of work, such as honest and diligent, actual and pragmatic, hard work, developing and innovation in order to build up an overall, harmonious and sustainable development concept. They have to keep economic development as the central task, reinforce the sense of mission and responsibility, foster the right values, strengthen the consciousness of diligent government, hold the policy of the power used for the people, the sentiment for the people and the profits made for the people, get done with money, human relationship and power and get done well with self-own job.

Second is the local market order. In recent years, with the development of socialist market economy, the Party committees and governments at all levels take the establishment of standard market economy order as an important work. They have adopted a series of significant actions and achieved significant results. However, in some areas, the disordered market economy has not been essentially changed. Such problems as counterfeit and shoddy products glutting the market, disordered social credit, commercial frauds and other problems affecting market economic order still exists to some extent. These existing problems not only seriously affects the healthy running of economic activities and damages the interests of the country, people and enterprises but causes the deterioration of environment, decline of moral standard and ruin of country credibility and reform and opening image.

The regions we selected to invest shall have prosperous economy, standard market control, ordered order, stable enterprise production, legal enterprise and fine enterprise benefits. And in the economy environment, such phenomenon as counterfeit and shoddy products glutting the market, acts of abducting and cheating, buying selling under coercion and dominating the market shall not exist.

Third is to investigate the conditions of local infrastructural construction. The constructions of industrial parks have become an effective carrier of attracting investment, guiding industrial concentration and cultivating new points of economic growth for the infrastructure. Such infrastructure as the complete and perfect roads, water and

power supply, environmental protection and services can provide fine material conditions for the entry of enterprises at low cost.

Fourth is to understand the preferential policies. The local governments shall give priority to enterprises for such sections as planning arrangement, project initiation, examination and approval, counterpart funding, construction starting, enterprise establishment and entering for registration. It also has to provide preferential policies within regulation such as the charge of land use, power and water supply, taxation and administrative stipulated fees. Most importantly, the preferential policies shall be continuous, consistent and stable without high fees.

V. TO SELECT PRODUCTION BASE, THE RESERVES OF RESOURCES IS ALSO AN IMPORTANT FACTOR TO INVESTIGATE.

Just as the Chinese saying goes "nobody can accomplish anything without the necessary means". The development of salt chemical industry is greatly based on the local reserves of salt and related resources.

Sufficient salt resource is indispensable to the salt and salt chemical investment. Our country has a rich salt resource and a long mining history. The basic distribution condition is that: sea salt in eastern China, well salt in central and southwest and lake salt in northwest. In recent ten years, the raw salt demand in our country has increased rapidly because of the rapid development of salt chemical industry and its downstream industries. In 2007, the production and consumption of raw salt in our country was 59.18 million tons, ranking No. 1 in the world. The sea salt in our country are mainly distributed over the eastern sea salt area (including Liaoning, Hebei, Tianjin, Shandong and Jiangsu), accounting for 60% of overall production. However, the sea salt production in Bohai-rim area, such as Shandong, Hebei, Tianjin and Liaoning accounts for 90% of the overall production of the whole country. The solar salt from sea water has relation to the cost line length, mudflat area and climate conditions, which is greatly affected by climate. According to the

stipulations specified in the national Requirements on Accession to Chlor-alkali (Caustic Soda and PVC) Industry, "new PVC projects made by calcium carbide processed and other assorted caustic soda projects are not allowed to build in principle", the possibility of constructing salt chemical industry in eastern coastal areas is zero. The well salt in our country is mainly distributed in 18 provinces, such as Henan, Sichuan, Hubei, Hunan, Jiangxi, Chongqing, Yunnan, Jiangsu, Shandong, Anhui and Shaanxi. According to incomplete statistics, there are more than 10 salt deposits proved to have a reserve of more than 10 billion tons sodium chloride. Affected by the national policies and the project construction of all kinds of costal parks and industry, the saltern area in western sea salt area is decreased year by year and the capacity amplification and proportion are gradually declining, having little increasing potential. However, the well salt has a lot of advantages, such as rich resources, large distribution, and sound technology, low cost. In recent years, capacity of well salt has increased much and gradually enhanced its proportion in national overall output. At present, the planed and constructed salt-making capacity (mainly well salt) has exceeded 10 million tons/year, which can meet the demand of downstream industries. However, well salt is also greatly affected by the factors such as reserve, buried depth, single layer thickness, purity and geologic conditions.

The lake salt is mainly distributed in the northwest area, such as Inner Mongolia, Qinghai, Xinjiang and Tibet, especially the Qinghai lake salt, which has a reserve of more than 300 billion tons and a lower production cost. However, the economy development of northwest area is relatively backward, which has a lower demand on salt. Long distance transportation is the bottle-neck that restricts its development for a long time.

The proved salt mine reserves in our country is 382.4 billion tons in 1995 and the resource is over 6,200 billion tons. However, at present the salt total production in our country is less than 600 billion tons (see the list below), the salt resource in our country can completely meet the demand of a fast

developing salt-making industry for a long time. The resources condition in a lot of

provinces and cities can meet the demand of salt-making industry.

Recent Years' Crude Salt Output in China ten-thousand tons

Year	Sea Salt	Lake	Well Salt	Total
2003	2191.8	302.0	1158.6	3652.4
2004	2292.2	386.9	1353.7	4032.8
2005	2664.0	458.9	1689.3	4812.2
2006	3062.1	502.6	1865.3	5430.0
2007	3162.0	510.4	2245.9	5918.3

In addition, such factors as the guaranteed supply of coal, natural gas and calcium carbide, short transportation distance, low transportation cost, complemented electric power and sufficient water resources are directly related to the production cost of enterprises, which will directly affect the competitiveness of products.

The enterprises without resources superiority can not control their own destiny but controlled by others. And the development of enterprises will be greatly restricted by resources.

VI. TO SELECT PRODUCTION BASE, LOCATION ADVANTAGES ARE VERY IMPORTANT.

Location advantage is also an important index for production base selection. In our country more than 50% transportation radius of raw salt is over 200km and the consumption proportion of liquid salt is only about 10%, however, in United States, 80% transportation radius is within 150km and its liquid salt consumption is up to 51%.

Since China is taking the policies to develop its west and promote central plains, the selection of production base shall be based on Chinese current policies and comply with national industrial policy. Moreover, the selected place shall have strategic meanings, including rich resources and smallest transportation radius of raw materials and products and the located cities shall have some influence, which have smooth and timely information, convenient and fast logistics, close relation with neighbor cities and provinces, well-developed transportation,

super high ways, express highways, railways or water ways leading everywhere.

In the next few years, the market competition of domestic salt chemical industry will be further intensified and the cost competition will become the main ways. So, enterprises without location and resources advantages will obviously have no competition advantages.

VII. TO SELECT PRODUCTION BASE, THE RADIATING CAPACITY OF PRODUCTS IN LOCAL AREA IS CRUCIAL.

Cost of transportation is another important reason that affects products competitiveness. Yet product market is crucial to an enterprise.

There is a need to make clear that how many factories or customers in surrounding region need the product and what is the demand, scale, transportation distance, state of operation, prospect. Under the guaranteed product quality and price advantage, we have to use some marketing methods to keep old customers and develop new customers, trying best to enlarge the radiation radius, grabbing the market, improving sales and enhancing economic performance and enlarging strength.

VIII. TO SELECT PRODUCTION BASE, THE COMPETITIVE CONDITION WITHIN A CERTAIN AREA AND THE SAME INDUSTRY SHALL BE STUDIED.

Nowadays, in this super-competitive

environment, new competitors continuously come up and the inner industrial integration continuously intensifies. In this market environment, the one who catches the market preemptive opportunities and controls the dynamic state of competitors is the one who controls the initiative during competition. As the Chinese saying goes "Knowing the enemy and knowing yourself and you can fight a hundred battles without defeat". In some areas, you have to try to know the production and state of operation of the enterprises who make the same or same-level products, their cost factors, such as manufacturing technique, raw materials, transportation, water and power and workers, their output, sales, sales

conditions, marketing strategy, development strategy and implementation procedures. You also learn their experience and lesson and make best use of the advantages and bypass the disadvantages so as to adjust and modify own development road, improving and intensifying own competitiveness.

Generally speaking, the whole chlor-alkali industry has slowed its development step because of the high cost and national industrial policies. However, enterprises having advantages in resources, location and scale and complete industrial chains will expand based on low cost and enlarging their own market share, it dooms to have a better development space.