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중국의 포장산업 및 교육의 현실과 전망

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Facts and Forecasts in Packaging Industry and Education in China

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Abstract

China has witnessed tremendous changes especially in the field of packaging industry after the reform and opening policy commencing in early 1979. Thanks to the reform and opening policy by Deng Xiaoping, a former leader of China, packaging industry has been selected as one of the specialized industries, and this policy has made great achievements in the field of packaging.

The total volume of packaging industry now ranks the first in the overall industry in China and this indicates that this industry is taking a great role to bust up economic growth of China. In this paper, The facts and forecasts of packaging industry and education in China are introduced.

Key Words: packaging, China, industry, education

PACKAGING INDUSTRY IN CHINA

INDUSTRY GROWTH

The reform and opening policy has made great achievements in the field of packaging industry. Packaging industry in China contributes greatly to their own country, where produces 3000 billion RMB of domestic goods and exports about 120 billion dollars every year. Fixed assets reached to 80 billion RMB Yuan(equal to 9.6 billion US dollars) in 1996. In 1980, gross production volume of packaging industry was only 7.2 billion RMB, but it was 154 billion RMB in 1997, growing 19% of annual rate. it is estimated that total cost savings by improvement of packaging are up to 10 billion RMB every year(Table 1).

WORKING FORCE

In 1982, only 890 thousands people worked for packaging industry, but the number has increased up to 2480 thousands in 1996. Official sources also said that packaging companies

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Table 1. Industrial Growth in the field of Packaging in China.unit: billion RMB

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Value RMB	9	10.8	12.3	15.0	17.5	20.6	25.6	27.9	45.4	53.5	63.7	79.6	97.9	115	140	154
%Increase		20	13.8	21.9	16.7	17.7	24.3	9.0	62.7	17.8	19.1	24.9	23.0	17.7	21.2	10.3

Table 2. Production Volume of Major Packaging Industry in China. Unit: 10,000 ton

Industry	1982	2984	1986	1988	1990	1992	1994	1995	1996	% Increase
Paper	96	169	230	275	336	360	450	642	835	16.71
Plastics	38	49	75	84	87	150	170	202	243	14.17
Metal	24	49	53	67	69	100	115	143	161	14.56
Glass	158	283	404	429	444	600	635	608	443	7.64

were 2555 in 1982, but in 1996, the number jumped up to 16180.

PRODUCTION VOLUME

The ratio of production volume of packaging industry is also being growing, from 1.09% of China's total in 1982 to 2.05% in 1996: 16.71% of growth rate in Paper, 14.17% in plastics, 14.56% in metal, and 7.64% in glass industry. Table 2 represents growth of production volume of each category of packaging industry.

China is one of the world's largest producers in plastics bags, composite cans, laminated flexible packages, and metal cans. Table 3 indicates that paper packaging industry takes biggest parts and rises its share in total packaging market. By taking responsibility keeping the quality of products for domestic consumptions and international trades, the packaging industry are playing a bigger role in China's economic growth.

As economic and social development grew so fast in China, demand on paper and paperboard, which is used in export packaging, have been increased dramatically, too. In 1995, export volume of the retailing consumer goods was 40 billion dollars. which is one third of total export volume. Foreign trade of China foresees the volume would reach up to 50 billion dollars in 1998, and consequently this trend will increase market demand on paper packaging materials.

China is now manufacturing 24 million tons of paper and paperboards with 600 varieties and ranks the third in production volume among countries in the world. However, due to the poor quality of raw materials, outmoded technologies and equipment, the paper quality is not as good as that of developed countries.

According to customs figures, China's 1996 imports reach 51.6 million tons for paper products, and 28.4 million tons for pulp and wasted paper. This figure does not include import in illegal channels.

Table 3. Ratio of Production and Assets in China's Packaging Industry in 1996.

	Production Ratio(%)		Asset Ratio(%)	
	1996	1995	1996	1995
Paper	28.84	26.74	27.52	24.61
Plastics	26.49	26.54	24.40	24.22
Metal	10.60	9.94	11.07	11.44
Glass	6.37	7.49	6.53	8.16
Others	15.68	17.01	17.18	17.86
Machinery	7.45	8.42	10.09	11.14

China's gross domestic demand on paper is forecasted to grow 15 million tons each year, and will be up to 60 million tons within 4 years. China must import large volume of paper because its paper industry cannot produce enough of sufficient quality and quantity.

The total market demand for various plastic products in China is estimated to reach 8 to 10 million MT in 2000, and can be broken down into plastics needed for packaging, building materials, agriculture, engineering and daily items. Plastic packaging is the next important industry and shares 55% of total packaging industry with paper. Paper and plastic packaging industry enjoys an annual growth rate of 30% and 20%, respectively, while glass packaging industry drops its market share continuously.

Wooden packaging in China has larger market share compared to other countries, primely for shipping to America, Europe, Canada, Australia, and South East Asia. China still rely on natural wood for raw material rather than using manufactured wood. China doesn't have much forest resources and it is 120th lowest among 160 countries. Market demand for wooden packaging is still high, up to 9% of total packaging material market. In USA and Germany, it is only 2%, and 5% even in Japan. Consequently, it is needed to find a solution to keep forest resources and develop new substitutes to wood.

There is a trend to build "green obstacle" to keep out of wooden packaging materials in order to preserve environment in many developed countries. USDA(United State Department of Agriculture) announced requirements on wood packaging imported to the US from China, to prevent the Asian Long horned Beetle from further infesting US forests in November 11, 1998. Exports into the US from China that are shipped in solid wood packaging material(SWPM) will need to be treated by heat, fulmination, or the use of preservatives. Exporters need only provide the importers with certification from the Chinese that the packaging has been treated. Similar acts are also announced by Canada, Australia, and New zealand trade authorities. To against these movements, the Chinese trade authorities also announced new rule on November 1, 1999 requiring that wooden packaging materials originating from the US and Japan be treated against the pine wood nematode before entering the country. This rule will go into effect on January 1, 2000, and Chinese State Administration for Entry-Exit Inspection and Quarantine shall randomly inspect according to relevant regulations.

PACKAGING MACHINERY

From 1982 to 1996, China's gross packaging machinery production had been growing at the annual rate of over 17.8% as shown at Table 4. This statistic is a key indicator showing China's great achievements in the field of packaging industry.

REGIONAL STATS

Eastern China is much more important region for packaging industry. Table 5 shows that the production ratio in total packaging industry was up to 69% in 1996 and growth rates from 1995 to 1996 was 24.42%

Table 4. Annual Packaging Machinery Production Volume in China.

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	% Increase
Number (10000)	3.52	4.35	6.67	8.49	8.92	9.59	10.84	10.56	16.56	17.54	18.50	21.00	25.84	30.28	34.88	17.80

Table 5. Regional Production Ratio and Growth Rates in China.

	Eastern	Central	Western
1995(%)	67.29	21.47	11.24
1996(%)	69.06	19.53	11.41
Growth Rate(1995-96)	24.42	10.31	23.06

in Eastern China, which is much higher than other regions.

PACKAGING COMPANY

In China, packaging companies are either state-owned enterprises(SOEs), public corporation, private joint-stock companies, and foreign-funded joint ventures. There is a steady movement to change from SOEs to public corporation, increasing in numbers of private stock companies and foreign-funded joint ventures. See Table 6 and 7.

PACKAGING EDUCATION IN CHINA

Socio-economic policy could be a reason why packaging industry has been growing so fast in China. The other good reason that we could find is from predictive decisions by Chinese government, industries, and education institutes. They knew that packaging is a fundamentals for all industries.

Table 6. Comparison among Different Enterprise Forms in Packaging Industry of China.

Class	% by Gross Production		% by No of Employees		% by Assets	
	1996	1995	1996	1995	1996	1995
SOEs	29.83	39.56	33.89	44.73	30.45	38.33
Public Co.	43.47	41.05	48.99	45.26	41.60	38.56
stock companies	3.87	1.92	2.76	1.63	5.12	2.92
foreign-funded joint ventures	17.61	15.22	6.82	4.35	19.61	18.32
Others	5.22	2.25	7.54	4.03	3.22	1.87

Table 7. Growth Rate of Packaging Industry among Different Enterprise Forms in China.

Class	% Growth from 1995 to 1996		
	No of Companies	Total Production	Fixed Assets
SOEs	-22.81	-8.60	-12.12
Public Co.	23.81	28.39	48.96
stock companies	107.01	144.88	162.55
foreign-funded joint ventures	35.71	40.23	87.57
Others	266.82	181.27	111.98

In December 1983, the Prime Minister Manribu announced to promote science and technology by renovation. Following the address, all of packaging related governmental organizations, including Education division of Packaging Technology Institute, Technical Training division of Chinese Packaging Corporation, Ministry of Education held "National Packaging Education Symposium" from April 23 to 26, 1984.

At the first step, National Education Committee decided "Packaging Engineering" as a trial course in colleges, and finally established at 6 nationally well known colleges such as Jilin University, West Beijing Engineering University, Wuxi Light Industry University, Shanxi Mechanical College, Tienjin College, etc. It took only 3 years that 40 universities and 30 technical schools installed packaging departments or set the packaging courses in related departments. In late of 1984, National Education Committee also approved to establish an independent college, "College of Packaging."

In 1996, graduate study program has been approved by National Education Committee and finally formed fully systemic packaging education through high school, technical school, college, graduate program and adult education. 20,000 packaging major students were graduated and take a great role in Southern East Seashore Region.

The great success in China's packaging industry is not only by the governmental supports, but also by good education systems. It is easy to see that packaging industry has bright future with continuous supports to education.

FORECASTS IN PACKAGING INDUSTRY IN CHINA

The growth rate in China's packaging industry has surpassed its GDP growth since 1980. From another point of view, packaging industry still has much room for development and not yet satisfied increasing consumer needs. Packaging industry is playing an essential role in China, and it is sure that rapid development of packaging will contribute greatly to the success of other industries.

It is easily expected that the total production volume will reach up to 193 billion RMB Yuan in 1999, referring to the average annual growth of related industries such as food, cosmetic, clothing, chemicals, construction, agricultural products, and electric devices. Production volume of each packaging industry will be 9.2 million MT for Paper packaging, 3.35 million MT for plastic packaging, 2.3 million MT for metal packaging, 9.4 million MT for glass packaging, and will make 550 thousand packaging machineries.

However, there are many pending problems that is not in favor for packaging industry. Total loss due to unadequate packaging is over 20 billion Yuan every year, but the quality of raw materials and accumulation of industrial know-how are not good enough. Infrastructure for packaging industry is poor resulting in poor packaging quality and design. Technological renovation and reconstruction of whole packaging industry in China is desperately needed in order to improve packaging technology and stability in the market.

For last two years, especially in 1998, economic situation in China has faced in serious depression. Financial crisis which devastated economy of South Eastern Asian countries was not just problem for those countries. Exports dropped dramatically for couple of years and packaging industry was not exception. Nevertheless, packaging industry recovered from the depression fast. Total production volume of packaging industry was 180 billion RMB in 1998, keeping its growth rate with 10%, which is higher than average growth rate of 7.8%.

Although level of technology and infrastructure of China's packaging industry is far behind to reach the level of developed countries, as long as government and industry regard packaging as a must-to-be for development of China, the future is bright.

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