ITALIA

MARKET REPORT OF ENVIRONMENTAL PROTECTION AND POLLUTION TREATMENT EQUIPMENT MANUFACTURING IN CHINA

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Italian Trade Commission
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意大利对外贸易委员会
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Contents

Industry Definition

Establishments within the Environmental Pollution Control Equipment Manufacturing Industry in China (China Industry Code - 3691) are mainly engaged in the manufacture of equipment used for environmental protection, including environmental pollution control, processing of waste materials, and recycling of industrial materials.

ACTIVITIES (PRODUCTS AND SERVICES)

The primary activities of this industry are:

- Air pollution control equipment
- Noise and vibration control equipment
- Radioactivity and electromagnetic wave protecting equipment
- Solid waste pollution control equipment
- Water pollution control equipment

The major products and services in this industry are:

- Air pollution control equipment
- Water pollution control equipment
- Solid waste pollution control equipment
- Noise and vibration control equipment
- Other environmental protection equipment
- Radioactivity and electromagnetic wave protecting equipment;

SIMILAR INDUSTRIES

- Industry: 2666 - Special Medicament Material For Environment Pollution Treatment in China

Description: Establishments within this industry mainly manufacture chemicals and materials used for pollution treatment, such as water pollution, air pollution and solid waste pollution.

- Industry: 4121 - Professional Equipment Manufacturing in China

Description: Establishments in this industry mainly manufacture specialized instruments and meters used for monitoring pollutants in water and air, as well as noise, radioactivity, and electromagnetic waves.

DEMAND & SUPPLY INDUSTRIES

- 2822 - Polyester Fiber Manufacturing in China
- 2823 - Acrylic Fiber Manufacturing in China
- 4411 - Thermal Power Generation in China
- 4413 - Nuclear Electric Power Generation in China
- 4419 - Alternative Power Generation in China
- B - Mining in China
- C - Manufacturing in China
- E - Construction in China

Key Statistics

CONSTANT PRICES

	2007	2008	2009	2010	2011	
Industry Revenue	*6,024.1	*8,903.8	*12,648.2	*14,275.8	*16,631.3	$Mill
Industry Gross Product	*1,815.3	*2,798.1	*3,858.0	*4,258.0	*4,935.0	$Mill
Number of Establishments	*1,842	*3,165	*3,269	*3,589	*3,928	Units
Number of Enterprises	*634	*1,087	*1,071	*1,114	*1,184	Units
Employment	*73,596	*101,964	*117,433	*122,289	*130,482	Units
Exports	*208.2	*348.5	*365.8	*496.3	*623.8	$Mill
Imports	*311.4	*370.9	*302.7	*274.8	*260.0	$Mill
Total Wages	*256.5	*455.2	*727.6	*917.9	*1,091.4	$Mill
Total Assets	*6,427.4	*8,835.1	*11,287.8	*12,883.5	*14,305.1	$Mill
Domestic Demand	*6,127.3	*8,926.2	*12,585.1	*14,054.3	*16,267.5	$Mill

CURRENT PRICES

	2007	2008	2009	2010	2011	
Industry Revenue	*5,018.9	*7,996.5	*11,289.2	*13,404.5	*16,631.3	$Mill
Industry Gross Product	*1,512.4	*2,513.0	*3,443.5	*3,998.1	*4,935.0	$Mill
Number of Establishments	*1,842	*3,165	*3,269	*3,589	*3,928	Units
Number of Enterprises	*634	*1,087	*1,071	*1,114	*1,184	Units
Employment	*73,596	*101,964	*117,433	*122,289	*130,482	Units
Exports	*173.5	*313.0	*326.5	*466.0	*623.8	$Mill
Imports	*259.4	*333.1	*270.2	*258.0	*260.0	$Mill
Total Wages	*213.7	*408.8	*649.4	*861.9	*1,091.4	$Mill
Total Assets	*5,354.9	*7,934.8	*10,075.0	*12,097.2	*14,305.1	$Mill
Domestic Demand	*5,104.8	*8,016.6	*11,232.9	*13,196.5	*16,267.5	$Mill

REAL GROWTH

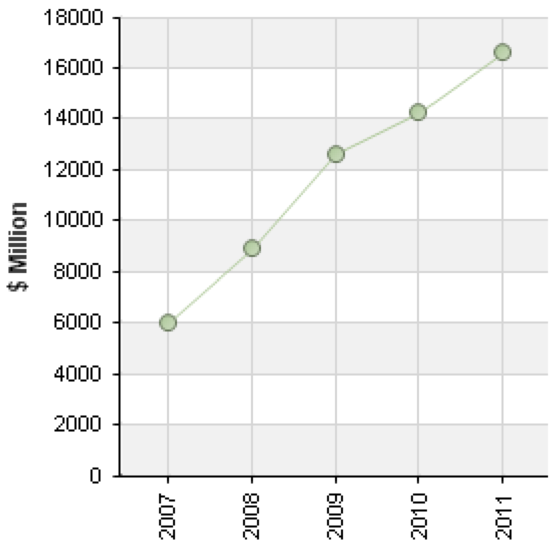
	2007	2008	2009	2010	2011	
Industry Revenue	*33.5	*47.8	*42.1	*12.9	*16.5	%
Industry Gross Product	*31.8	*54.1	*37.9	*10.4	*15.9	%
Number of Establishments	*12.6	*71.8	*3.3	*9.8	*9.4	%
Number of Enterprises	*12.4	*71.5	*-1.5	*4.0	*6.3	%
Employment	*10.2	*38.5	*15.2	*4.1	*6.7	%
Exports	*51.0	*67.4	*5.0	*35.7	*25.7	%
Imports	*0.3	*19.1	*-18.4	*-9.2	*-5.4	%
Total Wages	*17.0	*77.5	*59.8	*26.2	*18.9	%
Total Assets	*30.5	*37.5	*27.8	*14.1	*11.0	%
Domestic Demand	NC	*45.7	*41.0	*11.7	*15.7	%

RATIO TABLE

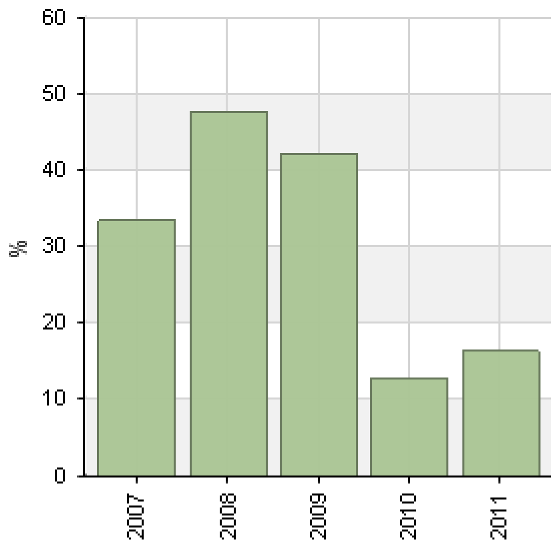
	2007	2008	2009	2010	2011	
Imports share of domestic demand	*5.08	*4.16	*2.41	*1.96	*1.60	%
Exports Share of Revenue	*3.46	*3.91	*2.89	*3.48	*3.75	%
Average Revenue per Employee	*0.08	*0.09	*0.11	*0.12	*0.13	$Mill
Wages and Salaries Share of Revenue	*4.26	*5.11	*5.75	*6.43	*6.56	%

GRAPHS

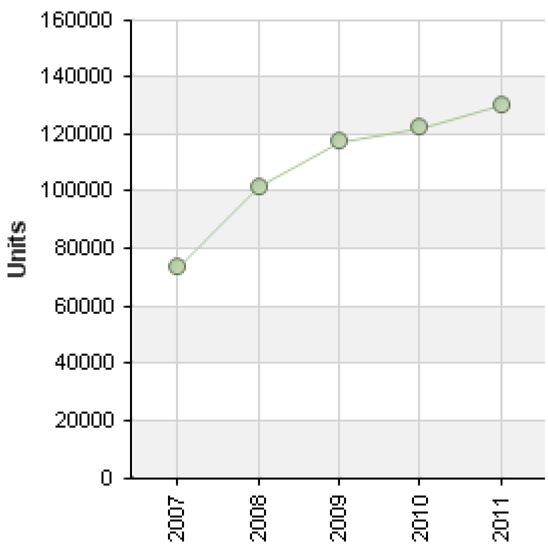
Revenue



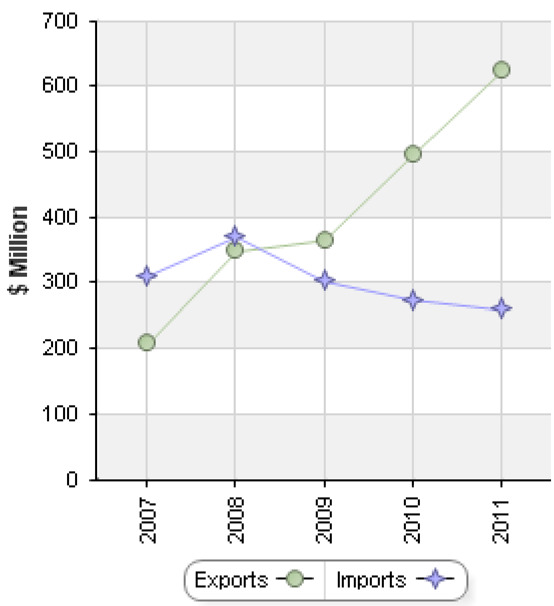
Revenue Growth Rate



Employment



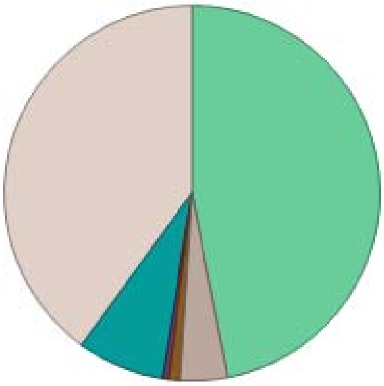
Imports and Exports



Note: Unless specified, an asterisk (*) associated with a number in a table indicates an IBISWorld estimate and references to dollars are to US dollars.

Segmentation

PRODUCTS AND SERVICE SEGMENTATION



Product/Services	Share
Air pollution control equipment	47.0%
Noise and vibration control equipment	4.0%
Other environmental protection equipment	1.0%
Radioactivity and electromagnetic wave protecting equipment;	0.5%
Solid waste pollution control equipment	7.5%
Water pollution control equipment	40.0%

The largest segment of this industry is air pollution control equipment, which is expected to account for about 47% of industry revenue in 2011. Major downstream industries of this segment include power, building materials, chemical, metallurgy, catering, motor vehicles, etc, which have created a rapidly increasing demand for extraction, desulphurization and organic exhaust gas control equipment. Electrostatic precipitators (ESP), bag filters and desulphurization equipment are the top three products of this industry. This segment in China has experienced a rapid development in the past several years due to the high level technology, booming downstream industries, and increasingly stringent regulations, which will also ensure the fast development of this segment in the next five years together with the rising environmental protection standards, great public attention resulted from the Beijing Olympic Games, and rapidly developing indoor air pollution control. This segment is therefore expected to account for a larger percentage in the next several years.

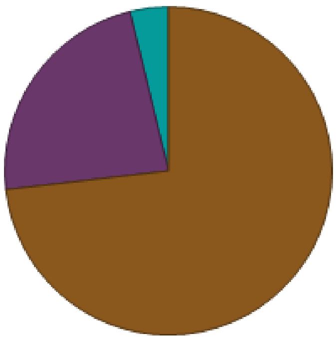
Water pollution control equipment is expected to make up the second-largest segment with about 40% of industry revenue in 2011. Domestic suppliers are able to offer complete water pollution control equipment from physical treatment equipment such as filtration, flotation, and sludge dewatering equipment etc, chemical treatment equipment such as disinfection equipment and automatic agent-adding devices, to biological treatment equipment and fluid control equipment. Among them filtration equipment and flotation equipment are the top two products of this segment.

ACMR-IBISWorld estimates that the market share of solid waste pollution control equipment will account for 7.5% of industry revenue in 2011. This segment could also be separated as household garbage and industrial solid waste. The rapidly increasing urbanization level and garbage treatment rate resulted in rapid demand for household garbage treatment equipment, while the booming downstream industries including mining, metallurgy, energy, petrochemical, and lighting industries, and increasingly strict environmental protection regulations have led to solid demand for industrial solid waste control equipment. Major products of this segment include conveying and storage equipment, sorting equipment, pulverizing and compressing equipment, incineration equipment, disposal equipment, and resource reuse equipment.

Noise and vibration control equipment is estimated to account for 4% of industry revenue in 2011. Traffic noise, industrial noise, building construction noise and social activity noise are the four major sources of market for this segment. Products of this segment are usually categorized into noise elimination, absorption and insulation, and vibration control. Increasing noise control standards, improving technologies and booming downstream industries are the main development drivers of this segment.

Radioactivity and electromagnetic wave protecting equipment is still in the initial stage in China with only about 0.5% of total industry revenue, while other equipment including waste material processing equipment and industrial material reuse equipment together will account for about 1% of industry revenue.

MAJOR MARKET SEGMENTS



Market Segment	Share
Industrial	73.2%
Municipalities	23.0%
Exports	3.8%

The largest market segment of Environmental Protection and Pollution Control Equipment Manufacturing Industry in China is the industrial sector, which is expected to make up about 73.2% of total revenue of this industry in 2011. High pollution industries including power, building material, chemical, metallurgy, and mining are the major customers of air, water, solid waste, and noise control equipment. It is expected that this market segment will continue to expand and account for a larger percentage in the future, mainly due to the fast development China's secondary industries. The Chinese government is also paying great attention on cleaner production and cyclic economy, and raising the pollution discharge standards and implementation degrees.

Municipalities are another large market for environmental protection and pollution treatment equipment, and is expected to make up about 23% of total industry revenue in 2011. This segment includes municipal sewage treatment, household garbage treatment, and noise control. The rapidly raising urbanization level and pollution treatment rates, increasing environmental standards, and the growing public attention on the surrounding environment are the major drivers of the development of pollution control equipment used for municipal areas.

Exports are forecast to account for 3.8% of industry revenue in 2011, up from 3.1% in 2006. The improving domestic manufacturing technology and capacity are the main reasons for the fast percentage increase of the industry's exports.

INDUSTRY CONCENTRATION

The level of industry concentration is low

The Environmental Pollution Control Equipment Manufacturing Industry in China has a low concentration level with the top four players accounting for an estimated 18.7% of industry revenue in 2011. A figure of less than 40% for the top four players is regarded as low.

Many enterprises within this industry focus on several specific product segments, which limits their influence on the whole industry and results in a low level of industry concentration.

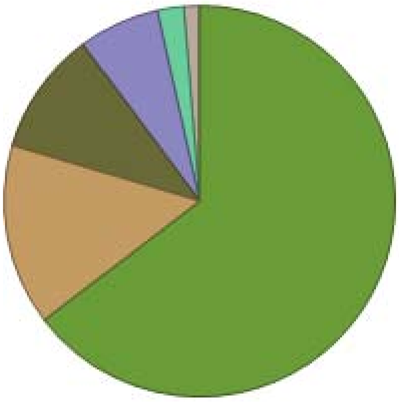
Due to the different development history and levels, different product segmentations of this industry are subject to different concentration level. For example, in the field of electrostatic precipitator, three firms control 51% of the domestic market share, while in the water treatment equipment segment, the industry concentration is very limited.

The government is now encouraging mergers and acquisitions as well as the development of large environmental protection corporations. It is expected that as the top enterprises within this industry gain more government financial and policy support, the industry concentration level will increase in the future, resulting in several large domestic environmental protection equipment manufacturers with international competitiveness.

GEOGRAPHIC SPREAD

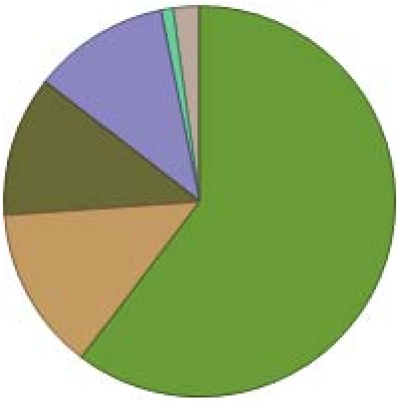
Year: 2011

Geographic Spread of Employment



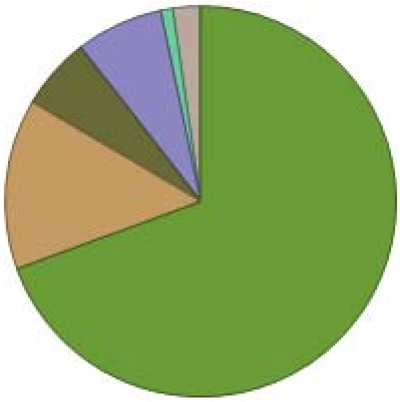
Region	Percentage
East China	64.6
Middle South China	15.0
North China	5.9
North East China	6.7
North West China	2.2
South West China	1.3

Geographic Spread of Establishments



Region	Percentage
East China	60.3
Middle South China	13.6
North China	6.7
North East China	11.3
North West China	1.0
South West China	2.2

Geographic Spread of Industry Revenue



Region	Percentage
East China	69.4
Middle South China	14.1
North China	4.0
North East China	7.2
North West China	1.0
South West China	2.3

Industry operations are mainly located in East China, North China and North East China regions. Provinces such as Jiangsu, Zhejiang, Liaoning, Shandong, Hebei and Beijing, are forecast to account for 67.4% of total industry revenue in 2011.

- **Jiangsu, Zhejiang and Shandong**

East China is the main region for this industry and the most dynamic provinces in this region are Jiangsu, Zhejiang and Shandong. Because of the advantages of location, transportation, and policies, this region is the manufacturing center across many economic sectors, which has created a large market for pollution control equipment. Several leading manufacturers in this industry, including Tianjie Group Co., Ltd. and Feida Group Corporation, are located in this region.

Jiangsu and Zhejiang are the top two provinces of this industry in China with an estimated revenue share of about 37.3% and 14.4%, respectively, in 2011. Shandong province is also expected to contribute 4.9% to total industry revenue in 2011. Establishments that are located in these three provinces are forecast to account for 48.4% of total establishment numbers, with 52.8% of industry employment.

- **Liaoning**

North East China is a historically heavy industrial region with high levels of machinery and some major environmental problems, which generally indicates a large market potential for firms in this region. Liaoning is the main province in this region with an estimated share of 5.5% of total industry revenue in 2011. Establishments located in Liaoning province are forecast to account for 9.9% of total industry establishment numbers in 2011, with 6% of the industry's employment.

- **Hebei and Beijing**

North China is the second-largest region in this industry, with Hebei and Beijing being the most dynamic areas. The 2008 Beijing Olympic Games had the theme of "Green Olympics" and the government placed great importance on the whole environmental sector in Beijing. The Central Government invested a great amount of capital in the city and surrounding areas to deal with environmental pollution problems, which then created a large and rapidly increasing market for enterprises within this industry. Industry revenue generated in Hebei and Beijing in 2011 are expected to account for 5.3% of the industry's total, with 10.2% of total establishment numbers.

Market Characteristics

MARKET SIZE

During 2011, industry revenue is expected to total $16.63 billion, up 16.5% from 2010 (constant 2011 dollars). The annualized growth rate of industry revenue in the five years through 2011 is expected to be 29.8%. This high growth is due to the Chinese Government's support for this industry and the environmental sector in China. Over the next five years, industry revenue is expected to increase at a slower rate of 13.2%, totaling $30.90 billion by 2016.

The two main product segments in this industry are water pollution control equipment and air pollution control equipment. Combined, these two segments account for around 87% of industry revenue. The Government has imposed strict environmental protection conditions on the agricultural, mining, manufacturing and construction sectors to reduce the negative effects of China's rapid economic progress on the environment. This has contributed to the rapid development of this industry in recent years and will continue to drive industry growth in the future.

The industry's exports are expected to total $623.8 million during 2011, which will account for 3.8% of industry revenue. Exports have increased strongly in recent years due to greater environmental awareness around the world, and higher output from Chinese companies of environmental protection and pollution control equipment.

Competing imports are expected to amount to $260 million in 2011, down 5.4%, and account for 1.6% of domestic demand for the year. Some downstream Chinese firms require high-end equipment and therefore purchase high quality, foreign-made environmental equipment. However, with the improvement of production technologies of Chinese manufacturers, share of competing imports in domestic demand is expected to keep decreasing.

The industry is expected to employ over 130,400 people and pay wages of around $1.09 billion in 2011. ACMR-IBISWorld estimates that 3,928 individual establishments and 1,184 enterprises will be in operation in this industry in 2011.

LINKAGES

a) Demand Linkages

- B - Mining in China

Mining companies are required to monitor and control pollution levels from mining operations.

- C - Manufacturing in China

High-polluting manufacturers need to monitor and control pollution and waste.

- 4411 - Thermal Power Generation in China

Thermal power generators are major pair polluters and are required to monitor pollution levels.

- 4413 - Nuclear Electric Power Generation in China

Nuclear power generators are required to monitor the air for radioactive pollution.

- 4419 - Alternative Power Generation in China

This industry is required to monitor and control any environmental pollution problems.

- E - Construction in China

China's construction sector is a major polluter and is required to control pollution levels.

b) Supply Linkages

- 2822 - Polyester Fiber Manufacturing in China

Important raw materials for enterprises within this industry to produce environmental protection equipment.

- 2823 - Acrylic Fiber Manufacturing in China

Important raw materials for enterprises within this industry to produce environmental protection equipment.

- C - Manufacturing in China

Establishments within this sector's General Machinery Manufacturing Sub-sector provide different product parts and machining tools required for manufacturing environmental protection and pollution control equipment.

DEMAND DETERMINANTS

The main factors affecting demand for services and products supplied within this industry include economic growth levels, government support, environmental protection standards, industry upgrades, and increased living standards.

- **Economic growth levels**

This has been particularly high in China in recent years and has resulted in booming downstream industries, and created broader and larger markets for environmental protection and pollution control equipment.

- **Strong government support**

This includes the large sum of fiscal investment on the whole environmental sector in China, increasingly strict implementation of policies, and regulations on environmental protection. The government invested 1.53 trillion Chinese Yuan (around 1.35% of GDP value in China) in environment protection during 2006 and 2010. Over 200 kinds of key equipment of this industry also get strong taxation and marketing support from the central government.

- **Environmental protection standards**

Improving environmental protection standards and requirements, and increasingly strict implementation of policies and regulations benefit this industry. For example, the municipal sewage treatment rate in China in 2006 was 45%, and is planned to achieve 60% in every city, and to reach 70% in provincial capital cities, tourism cities and key cities of environmental protection in future years. This kind of increased requirement creates a large market for enterprises within this industry.

- **Industry upgrades in developed areas in China**

Environmental protection equipment is also positively affected by the upgrade of economic structures in developed areas in China. This involves demand for new techniques and equipment to achieve modern and advanced environmental protection approaches.

- **Increasing living standards and public attention on environmental issues**

This drives the development of residential environmental protection equipment, such as indoor air purifiers, water clarifiers, and noise control products.

DOMESTIC AND INTERNATIONAL MARKETS

Domestic and International Markets Exports
The level of trade export is low
The trend of trade export is increasing

Domestic and International Markets Imports
The level of trade import is low
The trend of trade import is steady

Domestic and International Markets Analysis

- **Exports**

Exports are forecast to increase by 25.7% in 2011 to $623.8 million, and account for 3.8% of industry revenue for the year, up from 3.1% in 2006. Exports only increased by 5% in 2009 due to weaker foreign demand from the global financial crisis.

Exports are expected to increase rapidly in the future due to the improving capacity and technology of domestic manufacturers, as well as increasing global demand. Demand for inexpensive and high quality Chinese products from foreign countries keeps growing. Expanding capacity and improving manufacturing levels will help domestic manufacturers open and occupy larger foreign markets in more countries.

The major export markets of this industry in 2010 included: Australia (24.1%), India (10.7%), Vietnam (8.7%), Indonesia (5.8%) and Japan (3.6%). Non-residential water filtration and purification equipment (63.8%), industrial bag dust collectors (19.4%) and industrial electrostatic dust collectors (10.3%) were the major export products.

- **Imports**

Competing imports are forecast to decrease by 5.4% in 2011 to $260 million, following a 18.4% fall in 2009 as well as a 9.2% fall in 2010. Imports are expected to account for 1.6% of domestic demand for the industry's products, down from 6.6% in 2006. The main reason for the decreasing share of imports in domestic demand was the improved domestic manufacturing capacity and technology.

The major import sources in 2010 were Germany (22.6% of total imports by value), Japan (11%), the US (10.2%), France (8%), and Taiwan (7.8%). The top three imported products within this industry were non-residential water filtration and purification equipment (69.2% of total imports by value in 2010), industrial electrostatic dust collectors (9.1%), and industrial bag dust collectors (7%).

According to China's "Eleventh Five-Year Plan" from the Central Government, the import demands for environmental pollution control equipment will be from several main aspects: key technology equipment; municipal environmental infrastructure projects using foreign loans; key industrial pollutant source control; Development of the West Regions policies; and, cleaner production.

Major Exported Products by Value

Product	Percentage 2009	Percentage 2010
Non-res water filter	43.1	63.8
Ind bag dust collect	35.9	19.4
Ind electro dust col	16.3	10.2
Other ind dust coll	3.2	3.0
Ind cyclone dust col	1.5	3.6

Source: China Customs

Major Imported Products by Value

Product	Percentage 2009	Percentage 2010
Non-res water filter	60.9	69.2
Ind electro dust col	18.6	9.1
Ind bag dust coll	9.2	7.0
Other ind dust coll	8.2	10.0
Ind cyclone dust col	3.1	4.7

Source: China Customs

BASIS OF COMPETITION

Competition in this industry is medium
Competition in this industry is increasing

Firms compete against each other on several factors, including price, quality, and government relationships.

- **Price**

The price of the environmental protection and pollution control equipment is crucial for enterprises to compete with each other. Most of the equipment purchase activities of environmental and industrial projects are conducted through bidding, and suppliers with lower quotations have more opportunity to win bids.

- **Quality**

The quality of the equipment, including treatment effectiveness, lifetime, after-sales service, and ease of operation and maintenance, are important aspects of competition in this industry. Good quality equipment and services can help enterprises to win contracts and build a good reputation within the industry.

- **Relationships with local governments and design institutes**

Since many environmental projects are controlled by governments or large SOEs, enterprises with more government background or have deeper government relations usually have more chances to win contracts and gain revenue. Relations with design institutes and general contractors are also important as these units have great influence on the choice of pollution control equipment.

LIFE CYCLE

Life Cycle Stage

The life cycle stage is growth

Life Cycle Reasons

- Rapid industry revenue and value added growth in the past five years
- Increasing numbers of enterprises and employment in the industry
- Great development potential in the future

Life Cycle Analysis

Due to the wide range and variety of applications and market demands, different products from this industry are in different life cycle stages. For example, many air pollution control products such as electrostatic precipitator are now in a mature stage of the life cycle, while the radioactivity and electromagnetic wave protecting equipment have just started in China. However, seen from the whole aspect, this industry is on a growth stage of life cycle mainly because of the following reasons:

(1) The Environmental Protection and Pollution Treatment Equipment Manufacturing Industry in the past five years is forecast to experience a fast growth with an annualized value added growth rate of 29.1%, which is more than twice the rate of China's GDP growth during the same period.

(2) Due to the strong government policy support, large capital investment and great downstream demand, this industry has great development potential. There are also many products with very limited popularization in China, such as radioactivity prevention and noise pollution control equipment. These product segments also have great development potential.

(3) The strong government support and relatively high profitability attract a great amount of private and foreign capital into this industry in recent years, and has led to continuously increasing numbers of enterprises and employment.

Industry Conditions

BARRIERS TO ENTRY

Barriers to entry in this industry are medium
These barriers are steady

Environmental Protection and Pollution Treatment Equipment Manufacturing Industry is moderately technology intensive and requires special equipment and expertise to undertake the manufacture and installation activities and after services. Prospective entrants to this industry must have large amounts of funding to construct establishments and to purchase raw materials.

Prospective entrants of some specific product segments also need to develop the continuously improving technologies and face the intensifying marketing competition.

The increasing government policy supports of this industry reduce the barriers to entry to some extent. For example, approved manufacturers are exempt from paying business tax if the annual net revenue is less than 300,000 Yuan ($44,300 in 2010).

TAXATION

The business tax rate of this industry is 5% for equipment sales, and is 3% for engineering services such as installation, debugging, etc. Approved manufacturers of environmental protection equipment are exempt from paying the business tax if their net revenue is not more than 300,000 Yuan ($44,300 in 2010).

The usual taxes applicable for most businesses operating in China are as follows:

- **Income Tax - 25%.** Corporate Income Tax Law of the People's Republic of China was implemented from January 1, 2008. It unifies the previously different income tax policies for foreign and domestic enterprises. Within the new system, income taxes will be levied on both domestic and foreign enterprises at a rate of 25%, with favorable tax rates applicable to high-technology enterprises (15%) and small-size domestic enterprises (20%).

- **Value-added Tax (VAT) - 17%**; City Maintenance and Construction Tax - 7%. There are different tax rates according to the region where the enterprise is located: City - 7%, county - 5% and rural areas - 1%; and, Educational Surcharge - 3%. The Educational surcharge applies to all domestic enterprises, which pay the surcharge at 3% of their real value added tax.

INDUSTRY ASSISTANCE

- The level of Industry Assistance is high
- The trend of Industry Assistance is increasing

Key Tariffs

Goods	Low Rate*	High Rate*
Static electricity filters for industry use	5.0	40.0
Bag filters for industry use	5.0	40.0

*Percentage of value unless otherwise specified

Chinese government pays great attention to the environmental sector in China and has enacted a series of pollution prevention laws together with complete environmental quality standards and pollutant discharge standards. These laws define the responsibilities and obligations of different government organs and companies.

The government is deepening the marketization of the environmental industries in China such as municipal sewage treatment and solid waste disposal by ways of chartered operation system and financing reforms. The central government has also issued a series of public documents to advocate the activities of comprehensive utilization, energy saving, water saving, and cleaner production, which all positively affect the development of the Environmental Protection and Pollution Treatment Equipment Manufacturing Industry in China.

According to the "Eleventh Five-Year Plan", the Chinese Government invested 1.53 trillion Chinese Yuan on environmental protection sector in China from 2006 to 2010. These huge continuous investments on the environmental sector have created a great market for environmental protection and pollution treatment equipment.

To encourage the development of Environmental Protection and Pollution Treatment Equipment Manufacturing Industry as well as the whole environmental sector in China, the government issued the first and second sets of "List of Environmental Protection Industrial Equipment (Product) Currently Encouraged by the State" in 2000 and 2002, respectively, which together contain 125 different kinds of encouraged environmental protection equipment and products in the following fields: water pollution control equipment, air pollution control equipment, solid waste disposal equipment, noise control equipment, environmental monitoring equipment, energy saving and renewable resource utilization equipment, resource comprehensive utilization and cleaner production equipment, and environmental materials and chemicals.

In April 2007, the Central Government amended the two Lists with 107 new items. Companies using listed domestic equipment to conduct technical retrofit projects can enjoy credits of business income taxes. Companies can use accelerated depreciation methods on the listed domestic equipment after the approval of taxing authority.

Manufacturers of the listed equipment are exempt from paying business tax if its net revenue is not more than 300,000 Yuan ($38,000), and some other support such as subsidies on interest payment. Project construction and government procurement using fiscal capital should preferentially adopt the equipment in the list.

REGULATION AND DEREGULATION

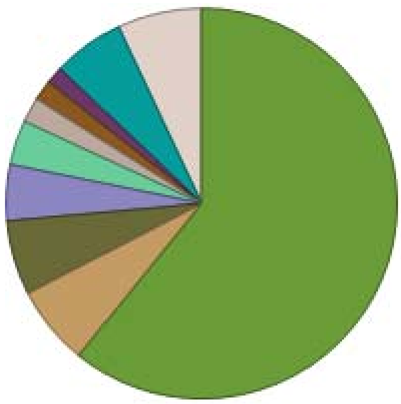
The level of Regulation is medium
The trend of Regulation is increasing

The General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ), a ministry directly under the State Council of China is in charge of issuing pollution control equipment standards that regulate the general rules of this industry including terms, definitions, classifications, quality requirements, test methods and regulations on labels, packages, storage and transportation of different kinds of equipment. For example, the standard of "GB/T 19249-2003", which was issued in July 2003, regulates the general rules of reverse osmosis water treatment equipment, while "GB/T 13931-1992" regulates the testing methods of ESP equipment.

The State Environmental Protection Administration (SEPA) is the department of the State Council that has natural ecological conservation and environmental pollution prevention as its main tasks. SEPA is responsible for formulating and organizing the implementation of laws, regulations and standards on pollution prevention of air, water, soil, noise, solid wastes, toxic chemicals and vehicle emission, etc. The number of environmental protection standard items increased from 395 in 1998 to 886 by mid 2006.

COST STRUCTURE

Year: 2011(forecast)



Item	Cost %
Purchases	60.8%*
Wages	6.6%*
Tax and Interest	6.2%*
Management and Administration	4.6%*
Depreciation	3.7%*
Research and Development	2.1%*
Rent	1.7%*
Utilities	1.4%*
Other	5.9%*
Profit	**7.0%***

The cost structure of companies in Environmental Pollution Control Equipment Manufacturing Industry in China varies depending on the size of the companies, the types of products supplied by the companies, the value of contracts, the level of charges and the equipment used.

In general, the largest expense of this industry is purchases, which includes raw material such as steel and fibers, processing and testing equipment. The percentage of purchases in cost structure changes greatly mainly due to the steel price fluctuation. Purchases are forecast to account for 60.8% of total industry revenue in 2011.

Salaries and wages are estimated to account for 6.6% of total revenue in 2011, up from 4.9% in 2006. During 2010, moderate inflation and rising labor costs in China resulted in higher wages. Management and administration expenses of this

industry are expected to account for 4.6% of industry revenue in 2011, down from 5.9% in 2006. This industry is characterized by high levels of private capital.
In 2010, about 63.6% of enterprises in the industry were privately-owned. These private enterprises are usually small in size and low in management efficiency. ACMR-IBISWorld expects that the percentage of administration expenses in the cost structure will continue decreasing in the next five years as enterprises within this industry mature as the market size expands.

Depreciation is forecast to make up around 3.7% of total industry revenue in 2011. Depreciation costs account for processing and testing equipment, vehicle purchases, communications equipment, office equipment, etc. The depreciation percentage of this industry is expected to increase over time as more advanced and sophisticated equipment is applied in this industry due to the rapidly improving technology level.

Other expenses include insurance, repairs, maintenance, and other miscellaneous costs, which are forecast to account for 5.9% of industry revenue in 2011.

CAPITAL AND LABOR INTENSITY

The level of Capital Intensity is medium

- Medium level of capital investment
- Requirements for highly qualified and trained staff
- Investment in equipment and manufacturing

Although advanced processing and testing equipment, which requires a great amount of capital, is being more widely used, especially in some key enterprises, there are still many small private companies adopting very simple manufacturing equipment, which negatively affects the capital to labor ratio of this industry.

Highly qualified and trained staff are important for enterprises within this industry to conduct the required manufacturing, administration and sales activities. Salaries and wages, plus management and administration expenses, and R&D, are expected to account for 13.3% of total industry revenue in 2011. Using depreciation as a proxy for capital (3.7%) and wages and other labor costs as a proxy for labor (13.3%), the capital to labor ratio for this industry in 2011 is expected to be 1:3.6. This indicates the industry has a medium capital intensity level.

The industry's capital to labor ratio is expected to increase over time as the improved technology level of this industry leads to an increasing popularization of advanced equipment, and limited growth of employment within this industry.

TECHNOLOGY AND SYSTEMS

The level of Technology Change is medium

Air pollution control equipment: In the field of electrostatic precipitator (ESP), China is one of the biggest manufacture countries in the world with an annual processing capacity of about 1.1 to 1.2 million t/a (tons per annum). The technologies on ESP body, magnetic control ESP, ESP in machines and electricity with multimode and double-zone, high concentration ESP as well as sound wave cleaning are high standard. In the field of bag filter, China has also reached an international leading level, domestic suppliers are capable of offering complete product lines meeting the requirements in different situation.

In the field of desulphurization equipment for thermal power plants, domestic technologies are basically foreign introduced. Several top enterprises are now able to provide equipment and engineering services for 600MW and above thermal power generators. China also has flue gas desulphurization techniques for 300 to 600MW thermal power generators with independent intellectual property rights.

Water pollution control equipment: Chinese companies produce equipment for water pollution treatment, filtration, and disinfection. Domestic enterprises also developed some new sewage treatment equipment. However, some specific industrial areas still highly depend on some imported key equipment to control water pollution.

Noise and vibration control equipment: In general, the processing and manufacture level of noise and vibration control equipment in China is behind international advanced levels mainly due to the weak R&D ability, incomplete standards and testing methods. However, after many years of development, the qualities of mufflers and vibration isolators used for automobiles and some special machines have reached high quality levels. Traffic noise pollution control products including noise barriers and insulation windows also developed greatly. There also several relatively advanced and large enterprises focusing on acoustic materials.

INDUSTRY VOLATILITY

The level of volatility is high

Industry revenue volatility during the five-year period to 2011 was at a high level due to strong revenue growth from year to year driven by high downstream commercial and government demand, and some significant fluctuations. Growth in individual years ranged from 12.9% in 2010 to a peak of 47.8% in 2008. Large fluctuations in 2008 to 2010 were due to rapid industry expansion in previous years and the effects of the economic slowdown.

As the industry matures in future years, fluctuations across the years are expected to be less significant. Although industry revenue is forecast to be high at 13.2% on average each year to 2016, volatility is expected to be moderate as demand becomes more stable.

GLOBALIZATION

The level of Globalization is low
The trend of Globalization is increasing

The Environmental Pollution Control Equipment Manufacturing Industry in China is subject to a low globalization level, which is expected to increase over time.

Foreign capital is increasing in the Environmental Pollution Control Equipment Manufacturing Industry in China, and has already come to China in different ways. For example, JP Morgan Chase & Co. acquired 70% stock equity of Wuhan Kaidi Electric Power Environmental Protection Co., Ltd. in 2006. In 2011, foreign ownership firms are expected to account for about 13.7% of total industry revenue.

The Environmental Pollution Control Equipment Manufacturing Industry in China is still in a growth stage with great future development potential. It is expected that more foreign capital and enterprises will enter China and increase the industry's globalization level.

Loans from foreign governments or financial organizations play an important role in China's municipal environmental infrastructure construction, such as wastewater treatment plants. Usually, imported equipment is more frequently used in these projects.

The industry's globalization level is also positively affected by the increasing globalization level of the whole environmental sector in China and the increasingly frequent international partnerships and exchanges of technologies and systems within this industry.

Ownership Segmentation – 2011

Units Ownership Type	Percentage Enterprise Share	Percentage Revenue Share
State Owned	1.1	2.3
Collectively Owned	1.2	1.2
JECE	0.8	0.6
Shareholding	2.8	6.1
Private	63.6	51.2
Foreign	13.2	13.7
Other	17.3	24.9

Source: ACMR-IBISWorld Estimate

Key Factors

KEY SENSITIVITIES

The key sensitivities affecting the performance of the Environmental Protection and Pollution Treatment Equipment Manufacturing industry include:

- **Downstream Demand - Electric Power Generation**

Important market for air and water pollution control equipment.

- **Downstream Demand – Manufacturing**

Major downstream economic sector of this industry. The manufacture of building materials, chemicals, etc, boosts demand for environmental monitoring services.

- **Downstream Demand – Mining**

Important market air and water pollution control equipment.

- **Level of Environmental Protection Legislation**

Environmental protection legislation directly affects the execution of environmental standards and related regulations, which ensure the healthy and stable development of this industry.

- **Natural Resources and Environment - Pollution control and abatement**

Environment and pollution control regulation directly affects the execution of environmental standards and related regulations, which ensure the healthy and stable development of this industry.

- **Waste Disposal**

The disposal methods and quantity of both municipal and industrial wastes are directly related to this industry.

KEY SUCCESS FACTORS

The key success factors in the Environmental Protection and Pollution Treatment Equipment Manufacturing industry are:

- **Ability to pass on cost increases**
  Enterprises within this industry are facing the increasing prices of raw materials, such as steel, fibers, utilities, etc, in recent years. The abilities to control cost are important for enterprises to pass difficult times and gain profits.
- **Development of a symbiotic relationship with another industry**
  Many of the downstream projects are designed and conducted by design and research institutes or general contractors. Good relations with these institutes and contractors are important for product sales.

- **Ability to compete on tender**
  Most of the pollution control equipment purchase activities are conducted through bids. Enterprises with higher abilities to compete on tender have more opportunities to win contracts and be successful.

- **Provision of superior after sales service**
  Superior after-sales service is important for enterprises within this industry to build up reputations and gain new contracts.

- **Understanding government policies and their implications**
  This industry is highly affected by government policies. It is crucial for enterprises within this industry to understand the government policies and their preferential implications to choose target markets and make strategy choices.

Industry Performance

CURRENT PERFORMANCE

The entire Environmental sector has experienced rapid development during the last five years with very strong growth in downstream industries, continuous capital investment, increasingly strict environmental standards and policies, and growing public and government concerns on environmental protection issues.

During China's Tenth Five-Year Plan from 2002 to 2006, the Chinese Government invested around $87.8 billion on environmental protection, and created a large market for enterprises within the Environmental Protection and Pollution Treatment Equipment Manufacturing Industry in China.

The Government also invested 1.53 trillion Chinese Yuan (around 1.35% of GDP value in China) in environment protection between 2006 and 2010, and is expected to increasing investment in the following years.

Currently in China, water pollution control equipment and air pollution control equipment are the main product segments with about 87% of total market share of this industry. This grew at a rapid rate during the past several years due to the importance of these areas and government and public attention.

Other kinds of pollution control equipment such as noise and vibration control equipment, and radioactivity protection equipment, accounted for limited market shares.

- **Revenue increasing strongly**

Industry revenue is forecast to increase rapidly during the five-year period to 2011 at an annualized rate of 29.8% to $16.63 billion, up from $4.51 billion in 2006 (constant 2011 dollars). The major driver of this industry was the rapidly increasing domestic downstream demand for environmental protection equipment, which grew significantly during the period due to the rapid development of China's economy, heavy investment in the environmental sector and the government's increasingly strict environmental protection regulations. Rapidly increasing exports and improving product quality and price also positively affected industry revenue growth.

Industry revenue growth peaked during the current period in 2008 at 47.8%. Booming downstream industries, such as thermal power and building materials resulted in surging demand for pollution control equipment, especially solid waste pollution control equipment. High growth in enterprise numbers within this industry in this year was another important reason for the rapid growth rate.

Value added (made up of wages, depreciation, profit, tax and interest), which is the industry's contribution to China's GDP, will increase in the five years to 2011 at an annualized growth rate of 29.1%, slightly lower than industry revenue growth.

Increased production costs caused by increasing purchase and utility expenses were partly counteracted by increasing product prices. Improved technologies and equipment, which enable enterprises within this industry to provide higher value-added products and services, positively affect industrial value-added.

- **Imports**

Competing imports of environmental protection and pollution treatment equipment in China will undergo decreases during the five years to 2011 with an annualized rate of 3.5%. This is mainly due to the continuously improved domestic capacity and technology levels of the industry, which were greatly supported by the government and various capital investments.

The import share of domestic demand continued to decrease from 6.6% in 2006 to a forecast 1.6% in 2011. Import growth peaked in 2008 due to strong downstream demand for high quality environmental equipment and pollution control equipment in China. An import decline of 18.4% in 2009 was due to weaker domestic demand for high-end equipment due to the global financial crisis. Competing imports continued decreasing in 2010 and 2011.

- **Exports**

The industry's exports are forecast to increase rapidly growth during the five years through 2011 with an annualized growth rate of 35.2% to total a forecast $623.8 million by the end of 2011. The main drivers of export growth included improving domestic capacity and technology levels, as well as stable increases in foreign demand. Although exports as a share of industry revenue have increased greatly and rapidly in the past five years, these will still very limited and amount to a forecast 3.8% in 2010.

- **Enterprise numbers**

The number of enterprises in this industry will increase continuously at an annualized growth rate of 16% to a forecast 1,184 by the end of 2011. The number of enterprises increased strongly in 2008 by 71.5% as many investors were attracted by the great development potential and relatively high profitability of this industry. The decline in 2009 was due to high growth in previous years and due to negative influences from the global financial crisis. In 2010 and 2011, the number of enterprises increased due to the recovery of China's economy and downstream demand.

For enterprise ownership, in terms of revenue, the private capital percentage is expected to continue to increase in the past five years from 36% in 2005 to about 51.2% in 2011. State-owned and shareholding capital will decrease steadily and account for 2.3% and 6.1% of total industry revenue, respectively, in 2011.

- **Wages and employment**

Total industry wages are expected to increase at an annualized rate of 37.8% in the five years through 2011, while the annualized growth rate of employment during the same time was 14.3%. Wages per employee increased from $3,283 in 2006 to a forecast $8,364 in 2011.

Wages as a share of industry revenue will increase from 4.9% in 2006 to around 6.6% by the end of this period. This is mainly because the labor costs in China experienced significant increases in recent years.

HISTORICAL PERFORMANCE

The whole Environmental Sector in China experienced four development stages as follows:

- The first stage, from 1973 to 1979, is the "embryonic" stage started by the establishment of Environmental Protection Leading Group of State Council. The Environmental Protection and Pollution Control Equipment Manufacturing Industry in this stage was mainly focusing on treatment on waste water, air and solids pollution.

- The second stage, from 1979 to 1990, is the initial stage as China started its reform and open economy policy, and regarded environmental protection as one of the basic national policies. Environmental management systems were founded and many professional research and design institutes and universities joined the environmental protection sector. Enterprises in townships started to rise and formed a professional force of this industry. The Environmental Protection and Pollution Control Equipment Manufacturing Industry in China developed steadily in technology, equipment, and services.

- The third stage, from 1990 to 2000, was a stage of rapid development, started by the issuance of the first national guide of environmental protection industries by the State Council. With strong policy support, the whole environmental sector, experienced rapid development with expanding industry scale and employment. The environmental sector became an important component of China's economy.

The Environmental Sector in China entered its fourth stage since 2000 when a market economy was established. Environmental protection became an urgent issue to both the government and the public due resource and environmental concerns. The marketization of the environmental sector was greatly enforced, which was characterized by the special permit system. This greatly benefited the Environmental Protection and Pollution Treatment Equipment Manufacturing Industry in China.

Industry revenue and value-added continued to increase during the period from 1998 to 2006 at annualized growth rate of 24% and 20.8%, respectively, and totaled $4.51 billion and $1.38 billion, respectively, by the end of 2006 (constant 2011 dollars).

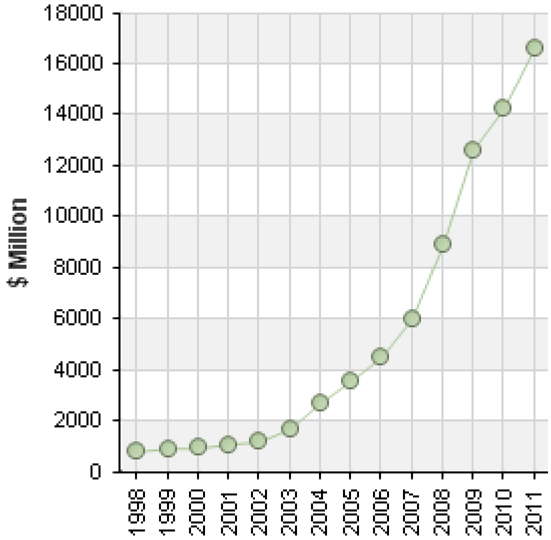
Enterprise numbers increased from 182 in 1998 to 564 in 2006 at an annualized rate of 15.2%, while employment increased by about 8.7% annually during the same period, which was mainly due to the restructuring of state-owned enterprises to meet the requirement of marketization. Improved technologies also contributed to the decline of employment. Total wages increased at an annualized rate of 22.2%, and the average wage per employee therefore grew rapidly from $1,288 in 1998 to $3,283 in 2006.

Competing imports showed a general upward trend during the historical performance period although experiencing fluctuations. The annualized growth rate of imports of this industry from 1998 to 2006 was 9.6%. Imports as a share of domestic demand declined from 15.7% in 1998 to 6.6% in 2006.

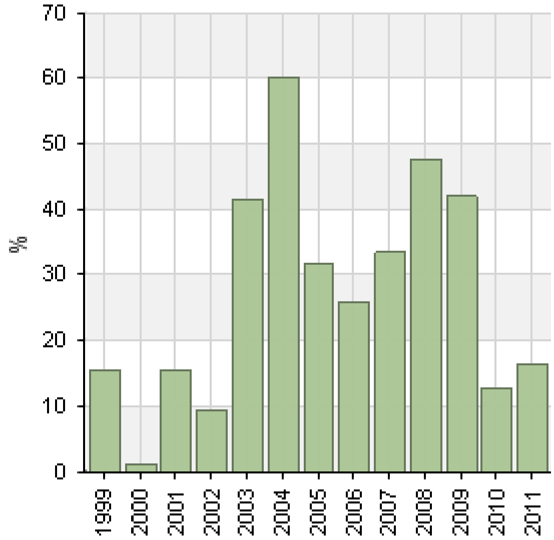
Revenue (constant prices)

	Revenue $ Million	Growth %
1998	806.6	N/A
1999	932.8	15.6
2000	945.3	1.3
2001	1,093.7	15.7
2002	1,196.8	9.4
2003	1,695.2	41.6
2004	2,715.3	60.2
2005	3,577.5	31.8
2006	4,512.6	26.1
2007	6,024.1	33.5
2008	8,903.8	47.8
2009	12,648.2	42.1
2010	14,275.8	12.9
2011	16,631.3	16.5

Revenue



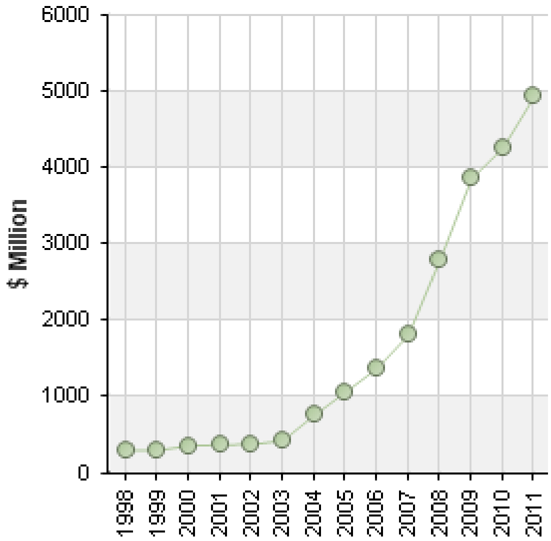
Revenue Growth Rate



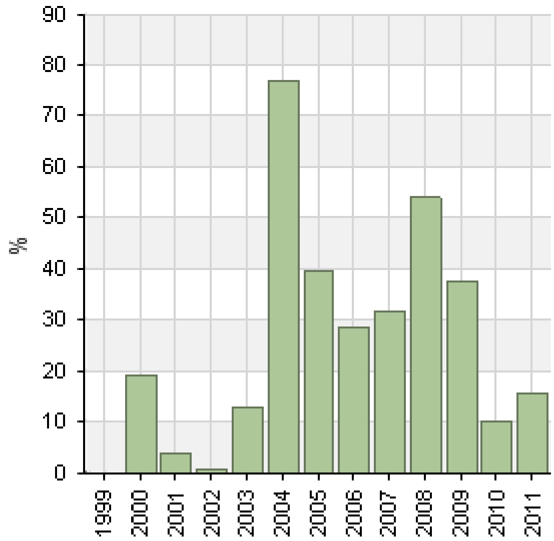
Gross Product (constant prices)

	Gross Product $ Million	Growth %
1998	304.4	N/A
1999	305.3	0.3
2000	364.4	19.4
2001	379.5	4.1
2002	382.4	0.8
2003	432.5	13.1
2004	766.3	77.2
2005	1,069.7	39.6
2006	1,377.2	28.7
2007	1,815.3	31.8
2008	2,798.1	54.1
2009	3,858.0	37.9
2010	4,258.0	10.4
2011	4,935.0	15.9

Gross Product



Gross Product Growth Rate

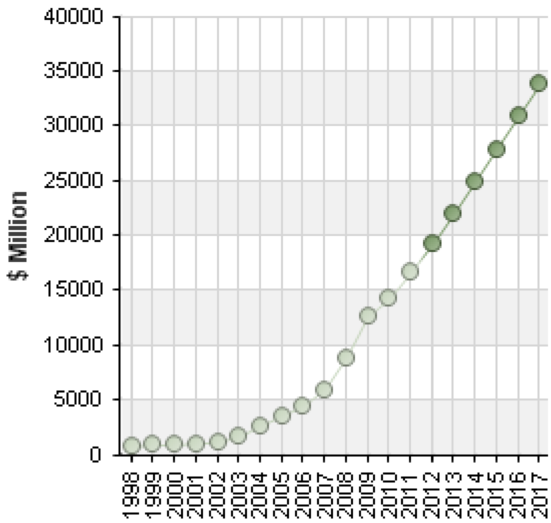


Outlook

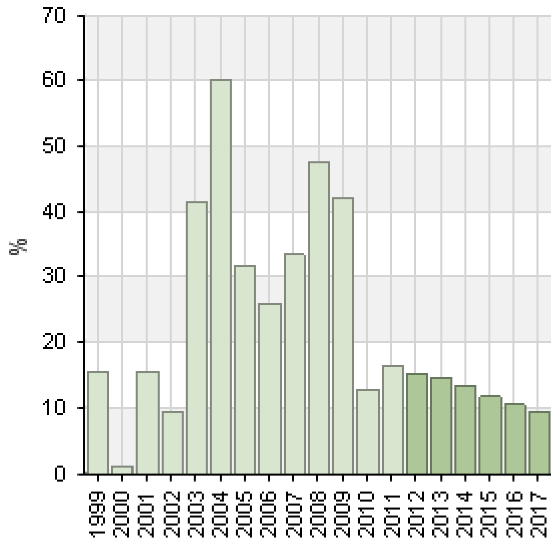
Revenue (constant prices)

	Revenue $ Million	Growth %
2012	19,192.5	15.4
2013	22,013.8	14.7
2014	24,985.7	13.5
2015	27,934.0	11.8
2016	30,895.0	10.6
2017	33,799.1	9.4

Revenue



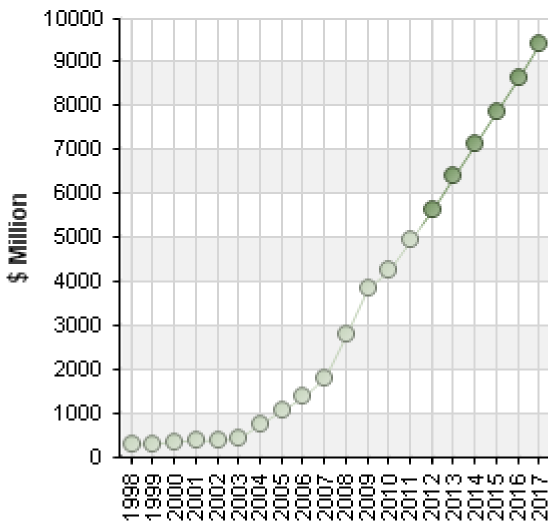
Revenue Growth Rate



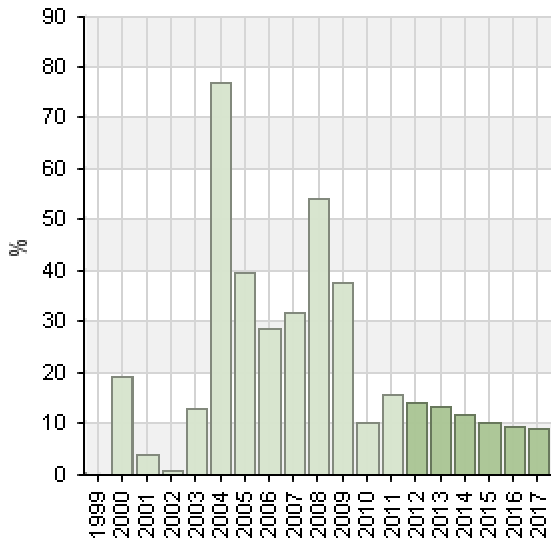
Gross Product (constant prices)

	Gross Product $ Million	Growth %
2012	5,635.8	14.2
2013	6,396.6	13.5
2014	7,145.0	11.7
2015	7,888.1	10.4
2016	8,637.5	9.5
2017	9,432.1	9.2

Gross Product



Gross Product Growth Rate



ACMR-IBISWorld expects that in the five years to 2016, total revenue of the industry is expected to increase at an annualized of 13.2% to $30.86 billion by the end of 2016. Value-added is expected to total $8.64 billion with an annualized increase of 11.8% in the five years through 2016.

The main drivers of industry growth in future years will be: strong government support and increasing environmental protection standards and regulations that ensure healthy and long-term development of this industry; booming downstream industries that create increasingly large market demand; and, improving technology and systems that enable enterprises to provide better and more complete products and services. Improving living standards will also positively affect the development of the industry, especially the products segments that directly related to people's daily life, such as indoor air pollution control equipment and noise pollution control equipment.

According to China's Eleventh Five-Year Plan (2006 to 2010) issued by the Central Government, China's entire environmental sector is expected to expand at an annualized rate of 15% during this time. According to the estimates of PRC Ministry of Environmental Protection, during the Twelfth Five-Year Plan period, the total market size of the environmental protection sector will total 3.1 trillion Chinese Yuan ($456 billion), stimulating a rapid increase in investment for the environmental protection sector in the next five to ten years.

The import substitution rate of key environmental protection and pollution control equipment will be greatly improved. There will also be a number of patents specified in the fields of flue gas desulphurization in thermal power plants, municipal and industrial sewage treatment, municipal garbage disposal, the recycle and disposal of waste domestic appliances and electronic products. Domestically produced equipment will generally meet market demand.

Air pollution control, water pollution control and solid waste disposal will still be the major product categories of this industry, and will maintain their high product segmentation shares due to their importance in people's life, governments and public attention. Market competition within these areas will be increasingly intense.

With strong government support, several large environmental protection corporations will enhance themselves with international competitiveness. Industry concentration is expected to also increase over time.

The globalization level of this industry will keep increasing as China's environmental sector is now attracting more foreign suppliers and investors, who are now entering China through different methods. Private capital is also expected to make up a larger share in the ownership segmentation in the future. The continuous investments will result in increases in enterprise numbers and employment, which are expected to grow at annualized rates of 6.1% and 7.9%, respectively, in the next five years.

Because of the greatly increased demand for high quality equipment, imports of environmental protection and pollution control equipment are forecast to increase at an annualized growth rate of 5.5% in the next five years. However, this forecast growth is lower than expected revenue growth, resulting in competing imports as a proportion of domestic demand decreasing from 1.6% in 2011 to 1.1% in 2016.

Improved capacity and technology will positively affect industry exports, which are expected to increase at an annualized rate of 18.1% during the next five years and total $1.43 billion in 2016.