

ASIA PRO-ECO II



Introduction to the Target Companies in Nanjing

《Pilot action - Implementing Voluntary Approaches for Urban Environmental Management in China》

Nanjing Environmental Protection Bureau

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Main energy consumptions are from Industries



- China is increasingly industrialized, and primary energy consumptions are mainly from industries, which account 70% of national total primary energy consumptions.
- Among industrial energy consumptions, those from energy-intensive sectors of steels, colored metals, chemical engineering, building materials account 70% of total industrial energy consumptions.
- Energy-intensive sectors consumes almost half of the national total energy.
- Industries in Nanjing are even consuming more energy.

Industrial Energy Consumptions in Nanjing

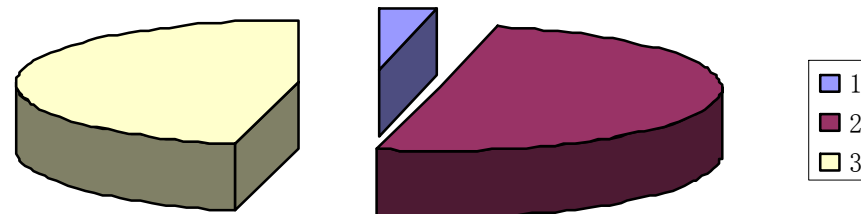


- In 2005, industrial GDP accounts 44% of total GDP in Nanjing. However industrial energy consumption accounts 80% of total energy consumption in Nanjing. Percentage of industrial energy consumption is 36% higher than that of industrial GDP.
- Sectors of Petrochemical, steels, building materials and electric power accounts 79% of total industrial energy consumptions in Nanjing.
- In 2005, energy consumption per 10 thousand Chinese Yuan GDP is 1.25 tons of coal equivalents in Nanjing.

Distribution of industrial product in Nanjing



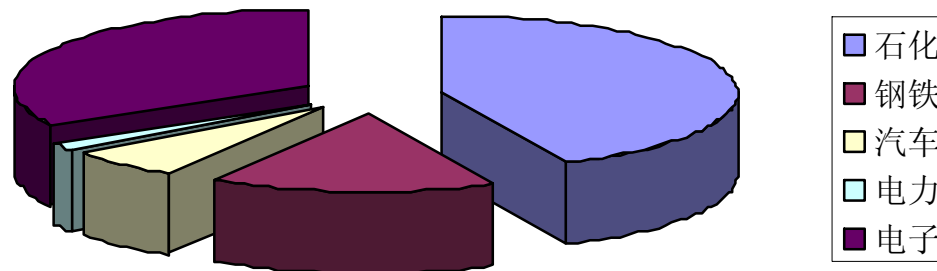
- Total GDP is 241.3 billion Chinese Yuan in Nanjing in 2005, in Which
- GDP of primary industries --accounting 3.3 of total GDP;
- GDP of secondary industries -- accounting 50.4 of total GDP;
- GDP of tertiary industries --accounting 46.3 of total GDP;



Distribution of key industrial product



- Nanjing's key industries are petrochemical, steels, automobile and electronic.
- In 2005, sectors of petrochemical, steels, automobile and electric power share GDP of 43%、16%、6%、33% and 2% respectively.



Industrial pollution loads



- Energy consumption is continuously at high level and industrial pollution load is increasing year by year, given to the main industry of heavy chemicals in Nanjing
- In the past five-years, coal consumption has increased by 53.9%, and emission of waste gas has also increased by 58.9%.
- From 2001 to 2005, water reuse and recycling have been improved substantially in Nanjing, and thus wastewater emission in Nanjing has decreased by 28%.
- From 2001 to 2005, generation of industrial solid waste has increased from 7.18 million tons to 11.59 million tons, accounting 61%. Meanwhile, rate of integrated reuse of industrial solid wastes has increased from 79% to 87%.

Industrial pollution loads



- In 2005, industrial coal consumption is 18.474 million tons, annual increasing by 14.4% (coal burning has increased by 10%));
- Energy consumptions are mainly contributed by the sectors of electric power and metallurgy.
- Emissions of industrial waste gas and SO₂ have increased by 15% and 3% respectively, given to the increasing of coal consumption.
- Main contributors of SO₂ are the sectors of chemical, electric power and metallurgy, accounting 32%、30% and 24% of the total SO₂ emission in Nanjing.

Industrial pollution loads



- In 2005, emission of industrial wastewater has been stabilized. Main pollutants of COD and NH₃ have been slightly increased, accounting 2.7% and 8%. However oil-pollutants have been decreased, as compared to the previous year.
- In 2005, generation of industrial wastes is 11.59 million tons, annual increasing by 20.8%. Main contributors are the sectors of metallurgy, electronic, chemical engineering.



Objectives of economic development



- According to the “Nanjing 11th Five-Years Plan of Economic and Social Development”, the economic development objectives of Nanjing are:
- Keeping high economic growth. Through optimizing economic structure, improving effectiveness and reducing consumption, total GDP of Nanjing will increase annually by 13%. GDP of the year 2010 will be double of GDP of the year 2005, GDP per capita in 2010 will be redouble of that of the year 2000. Total invest of the five-years fixed assets will be double of that of the 10th five-year. Retail of social consumables will increase annually by 13%, and unemployment rate will be less than 4%.

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Objectives of energy saving and reduction of emissions



- **Nanjing has also set up objectives of energy saving and reduction of emission: Efficiency of resource use will be substantially improved during the period of the 11th Five-Years. Energy consumption per 10 thousand Chinese Yuan GDP should decrease by 20%, as compared to that at the end of the 10th Five-Year (2005)**
- **Main pollutants' emissions should decrease by 5% in the baseline of 2005. Key pollutants' emissions should decrease substantially.**

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Comparative energy efficiency between China and the developed world



- Research shows that China's energy efficiency is about 33%, 10 percentage points lower than that of the developed countries.
- Energy efficiency of the main sectors of electric power, steels, colored metals, petrochemical, building materials, chemical, light industries and textile is 40% higher than that of the international top levels.
- Lower energy efficiency has resulted in not only wasting of coal and oil, but also discharging more CO₂ and SO₂, etc.



Mobilizing the potentials of enterprises in saving energy and reducing emissions



- There are considerable industrial potentials in improving energy efficiency and reducing emissions.
- What are the approaches/instruments that could stimulate such industrial potentials?
- Command-and-control is the main approach adopted by Chinese governments in industrial environmental management. Command-and-control is based on laws, regulations and standards.
- Industrial environmental management related systems are Three-Simultaneous, Treatment within Definite Period, Discharge Fees, EIA, etc. Those systems are effective only if the enterprises are not complying with relevant laws, regulations and standards.
- It is obvious that the traditional command-and-control approach is playing limited role in mobilizing potentials of enterprises in improving energy efficiency and reducing emissions.



Mobilizing the potentials of enterprises in saving energy and reducing emissions



- Voluntary approaches are based on equality and partnerships
- Key point of equality and partnerships is trusting each other.
- Enterprises believe that government, when formulating environmental policies, will take effective and equitable ways that will be good for enterprises finding cost-effective approaches in solving environmental problems.
- Governments believe that enterprises will take their responsibilities and achieve win-win situations in both economic and environmental objectives.
- Voluntary approaches are able to meet the needs of creating harmonious and environmentally friendly society, and it can stimulate enterprises taking more social responsibilities and contributing to the harmonious and environmentally friendly society.



Process of selecting the target companies



- Questionnaire surveys have been done in the 29 target companies during the implementation of EC's Asia Pro Eco I project: Feasibility Study on Demonstration of Voluntary Approaches for Industrial Environmental Management in China;
- Based on the questionnaire surveys, numbers of companies have been selected, and those companies are willing to take part in the follow-up pilot action.
- Target companies of this action (VA II) are as follows.

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YANGZI PETROCHEMICAL Ltd. (YPC)



- One of the national biggest petrochemical base
- Annual capacities of processing 8 million tons crude oil, 0.65 million tons ethylene, 1.4 million tons fragrant hydrocarbon, 1.05 million tons of PTA and 0.87 million tons of plastic.
- Running facilities of heat-power system, water supply and wastewater treatment.
- Producing basic organic chemical materials, 4 categories of finished oil and 43 kinds of products. YPC has 11 thousand employees, with area of 1000 ha..
- In 2005, emission of waste gas is sharing 18.8% of total waste gas emissions in Nanjing area, which is the biggest air pollution source in Nanjing. Emission of wastewater is sharing 15% of total wastewater of Nanjing, which is ranking No. 3 in Nanjing.

YANGZI PETROCHEMICAL Ltd. (YPC)



- YPC has established a well-functioning environmental management system and environmental monitoring system. Its environmental management capacity is at the national top level. Tasks of YPC in the 11th Five-Year Plan are:
- Increasingly implementing desulfurizing projects
- Promoting strict environmental inspection and examination systems, and achieving increasing of products and meanwhile decreasing of emissions.
- Promoting cleaner production and reuse of wastes, and developing circular economy.
- Strengthening education and training, and improving staff's environmental awareness.

YANGZI PETROCHEMICAL Ltd. (YPC)



- According to YPC's plan, three new boilers will be established, which will use the by-product of coke as the fuel. The three new boilers will generate annually 74.13 thousand tons of SO₂.
- Adopting circular technology for desulfurizing. 90% of sulphur can be removed, and 66.717 thousand tons of SO₂ can be reduced.
- Installing gas desulfurizing facilities in the current power stations and adopting ammonia-desulfurizing technology, it is estimated that 16.6 thousands tons of SO₂ can be reduced. Total of 83.317 thousand tons of SO₂ can be reduced from the power stations.

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SHANGHAI MEISHAN CO., LTD. ***(BGSM)***



- **BGSM is the sub-group of Shanghai Baosteel Group. It is one of the 512 big-size state-owned enterprises that are significantly supported by State Council**
- **Area of BGSM is 4.2 Km², with staff of 5357.**
- **It has coking plant, agglomeration, puddling, steel-making and heat-rolling and attached facilities of heat-power, oxygen-making, energy and transportation. Annual energy production of 3 million tons.**
- **Main technologies and facilities are at the top level in China, and some of them are in the top international level.**
- **In 2005, pollution load of wastewater emission is counting 17.7% of total wastewater pollution load of Nanjing, which is ranking No. 1. Pollution load of waste gas is counting 12% of the city total, which is ranking No. 12 in Nanjing**



SHANGHAI MEISHAN CO., LTD. (BGSM)



- **BGSM has established a well-functioning environmental management system. It has established Environmental Protection Committee, which is chaired by the General Manager of BGSM and members are from different departments of BGSM**
- **In 2006, BGSM has conducted a auditing, based on “Auditing of Cleaner Production for Steel Companies”. The auditing has been recognized by Municipal Economic Committee and EPB of Nanjing**

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SHANGHAI MEISHAN CO., LTD. (BGSM)



- Environmental Strategies of BGSM for the 11th Five-Year are the reduction and control of emissions, green development and creation of harmonious society.
- Overall objective is to achieve the class one of cleaner production of steel companies (top level). Measures are
- Implementing integrated project in the Western Discharge Point;
- Reconstructing project for rainwater pipeline in the Northern Discharge Pipeline
- Adopting electro-fabric dust-removal in No.2 Boiler
- Dust-removal project in blast furnace
- Dust-removal in steel-making converter
- Desulfurizing from the gas of No. 3 agglomeration
- Expending the treatment system of steel-making sludge
- Reconstructing of the secondary dust-removal in converter
- Dust-removal in the ground of furnace

Nanjing Steel Group Co. Ltd (NJSG)



- **NJSG is an integrated company with steel smelting and steel rolling.**
- **Recently NJSG is adjusting its products structure, based on national industrial policies. Its main product is wide & deep steel plate. In addition it also produces steel stick and wire.**
- **Product in 2006: Pig iron: 5.72 million tons; Steel: 6.05 million tons, Finished steel; 4.63 million tons.**
- **In 2006, energy consumption is 730 Kg of coal equivalents per 1 ton steel, decreased by 40 Kg of coal equivalents as compared to the previous year. New water consumption per 1 ton steel is 14 tons in 2006, decreased by 7 tons as compared to the previous year. Benefit of energy saving is 0.25 billion Chinese Yuan in 2006.**

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Nanjing Steel Group Co. Ltd (NJSG)



- **NJSG has formulated its 11th Five-Years Circular Economic Development Plan, in which objectives are:**
- **Energy consumption per 1 tons steel reaches 670 Kg of coal equivalents, decreased by 100 Kg of coal equivalents as compared to 2005;**
- **Water consumption per 1 ton steel reaches 5.3 tons, decreased by 15.7 tons as compared to 2005**
- **Coal gas purification: $H_2S \leq 200\text{mg}/\text{m}^3$**
- **Comparative energy consumption: $\leq 693\text{kg}$ of coal equivalents per ton steel;**
- **Water consumption: $\leq 5.3\text{m}^3/\text{ton}$ steel, reuse of water: 97%**

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Nanjing Steel Group Co. Ltd (NJSG)



- **Main energy-saving projects include: fully collection of gas from blast furnace, furnace, converter. The collected gas will be first used as fuel by the company, and the rest will be used by electricity generation.**
- **The Strategic objective is to build environmentally friendly and resource-saving enterprise.**
- **Has been awarded ISO14001 certificate. NJSG will promote cleaner production and circular economic development and achieve a harmonious and green NJSG**

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CHINA CEMENT MANUFACTORY CO., LTD (CCM)



- **CCM is one of the former Chinese five biggest cement factories. It was founded in 1921, and was the key factories of Chinese building materials.**
- **In 2002, CCM was bought by Anhui Whelk Group. Anhui Whelk Group is one of the 120 big companies recognized by State Council and it is the biggest cement company in China.**
- **Series of innovative technologies have been adopted by CCM since it was bought by Anhui Whelk Group.**
- **CCM has two production lines. One is producing daily 2000 tons cement, and the other is producing 5000 tons of cement. Annual production of cement is 2.8 million tons.**

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CHINA CEMENT MANUFACTORY CO., LTD (CCM)



- **CCM is the largest cement factory in Nanjing area, with full-time staff of 1648.**
- **Cement industry is the energy-intensive sector. In cement production, energy consumption shares 70% of total costs.**
- **For saving energy, CCM is planning to build up a power station by using the heat from the cement producing process**
- **This planned power station will supply 60% of electricity for processed material line, which account 40% of the total electricity of the CCM.**
- **The running of three production lines will ensure the supply of enough heat for electricity generation of 310 days per year. The total value of electricity is 76.67 million Chinese Yuan.**



HUA NENG POWER NANJING BRANCH (HUANENG NANJING)



- There are two electricity generators by using coal that are imported from Russia, with the capacity of 320 MW.
- The Plan for reduction of emission in the 11th Five-Year is:
- Technical innovation for desulfurizing in two generators;
- In 2007, reconstructing the low-nitrogen firebox of the No. 1 Burner and reconstructing the electric dust catcher.
- In 2009, reconstructing the low-nitrogen firebox of the No. 2 Burner and reconstructing the electric dust catcher.
- Ensuring the content of sulfur of the coal is less than 0.45%.
- Good maintenance of the electric dust catcher, and ensuring 98% running and dust collection of 99.6%.

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NANJING AUTOMOBILE MANUFACTORY GROUP (NJ AUTO)



- **NJAUTO is one of the national key auto enterprises.**
- **Total asset is 12 billion Chinese Yuan, with the area of 3.4 million meter square and 14.6 thousand staff.**
- **NJAUTO has four vehicle producing factories, which are Nanjing FIAT, Nanjing IVECO and Nanqi SOYAT. NJAUTO is producing 400 kinds of automobiles, with annual production of 0.2 million.**



NANJING AUTOMOBILE MANUFACTORY GROUP (NJ AUTO)



- **NJAUTO is actively developing circular economy and conducting cleaner production auditing.**
- **In 2006, there are 14 sub-companies conducted cleaner production auditing, and 10 have been recognized by Nanjing Municipal Economic Committee and NJEPB.**
- **The Forging company of NJAUTO has been awarded as the first class cleaner production enterprise**
- **The 14 sub-companies that have conducted cleaner production auditing have implemented 322 cleaner production projects.**

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NANJING AUTOMOBILE MANUFACTORY GROUP (NJ AUTO



- In the 11th Five-Year, NJAUTO will continue circular economic development and cleaner production auditing. Main measures are:
- Improving the old pollution sources, ensuring emissions are all complying with emission standards and achieving the goal of total emission control.
- Adopting new technologies and achieving objectives of: reduction of 5000 tons of coke burning, reduction of 50000m³/h gas emission, reduction of 100 tons dust and 51 tons soot, and reduction 10 tons SO₂.



ANGE ART TECHNOLOGY (NANJING) CO LTD (AATNJ)



- **AATNJ is the former Catalyzer Factory of China Petrochemical Nanjing Chemical Co. Ltd.. In the 1st June 2005, The U.S. ANGE Co Ltd bought this factory and the factory has been then the foreign company.**
- **In 12 June 2006, the Germany BASF bought the global ANGE. It is planned that the ANGE ART TECHNOLOGY (NANJING) CO LTD (AATNJ) will be re-named as BASF Catalyzer (Nanjing) Co Ltd in the 1st May 2007.**
- **Main products of AATNJ are catalyzers that are used in chemical industries.**



ANGE ART TECHNOLOGY (NANJING) CO LTD (AATNJ)



- **Pollutions of AATNJ include waste gas, wastewater, noise and solid wastes.**
- **Since its establishment, AATNJ has invested a lot in environmental protection. Its future environmental projects include: centralized industrial wastewater treatment, metal reuse from nickel-contained wastewater, treatment of NOx and duct removal from converters**
- **As soon as all planned environmental projects mentioned-above will be implemented, emissions of AATNJ will comply with national emission standards or even better.**



NANJING JINGZHIJIE WASTE DISPOSAL CO., LTD (NJ Jingzhijie)



- **NJ Jingzhijie is a professional solid waste disposal and treatment company, with area of 11000 meter square and 35 staff.**
- **NJ Jingzhijie has two incinerators, patent-technology firebox, gas purification system, burning process monitoring system, online environmental monitoring system and disinfection system for leaching.**
- **Annual capacity of NJ Jingzhijie is 8800 tons, which could almost meet the needs of waste disposal and treatment in Nanjing.**

THANKS !