Achievement and Countermeasure Research on Ningbo Industry Energy Conservation and “Vacating Cage for New Birds” Project

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Abstract. In this essay, the author holds the opinion that Ningbo has strictly implemented the related national, provincial and municipal arrangement, and takes the energy conservation, outdated productivity renewal and “Vacating cage for new birds” project as the important measures for ecological civilization construction and industrial transformation & upgrading. For instance, target-oriented responsibility system was executed on dual-control of energy, thus to promote the elimination of outdated productivity, to further develop the potential on energy conservation, and to promote the main areas and enterprises. At the end, as based on the present conditions of Ningbo, the essay suggests that it should take the “Ten-hundred-thousand-ten thousand” special activity as the measures, implement the responsibility system in dual-control of energy, strengthen the monitoring and adjustment of energy conservation target, further develop the potential on energy and water conservation, and further promote the monitoring and service of energy conservation, thus to accelerate the transformation and updating of energy conservation work, and make contribution to the economic and social development in Ningbo.

Present Conditions of Ningbo Industry Energy Conservation and “Vacating Cage for New Birds” Project

In 2014, the energy consumption per each GDP unit decreased by 5.5%, which was 16.7 in 4 years before the Twelfth Five-year Plan, that is to say, 90.3% of the Twelfth Five-year Plan was completed. The speed increase of energy consumption reached to 1.17%; the total energy consumption was 5.767 billion kilowatt-hour, increased by 3.11%; about 352 thousand coal equivalent energy was saved, covered about 141% of the annual plan; 14597 mu land was invigorated, covered about 118% of the annual plan; the carbon emission reduction work meet the provincial requirement. All the works related to Industry Energy Conservation and “Vacating Cage for New Birds” project were overfulfilled.

Main achievement of Ningbo Industry Energy Conservation and “Vacating Cage for New Birds” Project

Complete the Double-Control of Target Responsibility System

First, the decomposition of responsibility system shall be further strengthened. The target responsibility pledge shall be signed with 15 county governments, 12 main departments of municipal level and 174 main energy-consumption enterprises. Under such a responsibility system, the chief leader shall take the main responsibility, and others in charge of detail affairs shall take the overall responsibilities. Secondly, the performance target shall be determined logically. The Work Plan of Overall Energy Consumption Control of Ningbo in the Twelfth Five-year Plan Period was established (Y.Z.F. (2014) No. 80), the total energy consumption increase index was adopted in the performance
assessments of county (municipal) government and the administrative committee. In addition to the energy consumption per unit product and energy consumption per unit of output value, the differential energy consumption was also introduced in the main energy consumption enterprises. Third, the evaluation and assessment were strengthened. The result of 2015 energy conservation achievement shall be reported by the municipal government.

**Strength the Elimination of Outdated Capacity**

First, the differential power prices shall be implemented. The economic measures shall be taken to promote the transformation and update of foundry industry and stainless steel smelting industry. Policies including Implementing Advice on the Transformation and Updating of Foundry Industry, as well as Implementing Details on the differential power prices of Ningbo Foundry Enterprises were established and implemented. The tax income per each energy consumption unit was introduced as the standard for the determination of low efficiency enterprises in the foundry industry, which was the first attempt in China. On July 1, 2014, the differential power price was executed in the foundry enterprises in Ningbo. By the end of 2014, the differential power price was applied by 130 enterprises, with power income of over 16.88 million being received. 291 sets of outdated equipment were abandoned by 178 foundry enterprises. Occupies 75% of the total outdated equipments. 32 foundry enterprises were closed; 16 stainless steel enterprises completed the equipment updating; totally 66 stainless steel enterprises were closed down, occupies 68% of the total enterprises. The annual differential power price income reached 25.57 million, and the total differential power price reached 0.155 billion. Second, strengthen the remediation efforts in industry. 13 remediation was organized and implemented towards high-power-consumption and pollution industries. By the end of 2014, all involved enterprises in Hangzhou Bay printing and dyeing area and Yinzhou electroplate zone was shut down. Remediation and elimination work in Dinghai Shenzhen County Chanyang Aluminum ash melting and Yuyao Recycled copper smelting were basically completed. The Remediation and elimination work in Zhenhai Metal Surface Treatment (fastener), Cixi aluminum casting and slippers, as well as Xiangshan Casting and ammonia related industry were implemented according to the work plan. Totally 505 enterprises completed the elimination work in the year, among what 232 outdated enterprises were shut down, saving the energy consumption equivalent to 352 thousand ton standard coal. The capacity scale of the closed enterprises are as follows: steel making - 313 thousand tons, steel rolling – 90 thousand tons, glass – 2.87 million weight case, electroplate – 6.952 million liter, chemical fiber – 0.295 million ton, nonferrous metal – 0.203 million tons, papermaking - .0123 thousand tons, printing and dyeing – 0.252 billion meters, casting – 0.364 million tons, Clay brick – 13 places.

**Develop Energy Conservation Potential Deeply**

First, strengthening the enterprise management for energy conservation. Organizing and implementing 872 energy conservation projects with total investment of 5.99 billion, it expects to conserve 7.29 million tons coal per year. Organizing to carry out the clean production audit for 307 enterprises while 166 enterprises pass. Completing the energy monitor (the quota for energy consumption benchmarking) for 167 enterprises, issuing 56 notice for rectification and putting forward 918 opinions for rectification, among which excessive energy consumption quota of the Asia Garden Hotel has reported to the relevant departments and the next step will be the implement of punitive electricity price. Second, spread the energy conservation technology. Increasing the promotion and application of new energy conservation technology and new products in all kinds of field, organizing to hold the promotion conference for new energy conservation technology and new products like waste heat energy utilization in printing and dyeing industry, power and water saving in trade and tourism system, oil saving in fishery industry, waste heat utilization technology of screw expansion compressor, energy conservation technology of motor and so on, revising and promulgating “Ningbo City Energy Conservation Technology (product) oriented directory". Newly increasing 1 municipal industrial circular economy demonstration park, 17 demonstration enterprises,
15 municipal energy conservation and consumption reduction benchmarking enterprises, 61 municipal energy conservation excellent new products. Third, pay special attention to the comprehensive utilization of resources. Newly identifying 12 resource comprehensive utilization enterprises, total identify 70 enterprises. Annual output of resource comprehensive utilization reaches to 4.88 billion Yuan, decreased by 5%. The yield of resource comprehensive utilization reaches to 53.17 million tons, increased by 22.7%. Applying to decrease the value added tax of 275 million Yuan and income tax of 38million Yuan. Fourth, working together to promote “a total of five water treatment”. Focusing on industrial water conservation, formulating and issuing “Ningbo promoting industrial water conservation implementation scheme (2014-2016)”, organizing the research for the use of water and water conservation in four key water using industries as thermal power and thermoelectricity, paper making, beer, printing and dyeing. Implementing 28 key water conservation transformation projects with total investment of 69.96 million, and the expected water conservation capability reaches to 2.48 million tons per year.

**Carrying Forward the Energy Conservation in Key Area and Enterprises**

First, carrying out the service of consumption decreasing and efficiency increasing for enterprises. In 2014, in respect to the harsh situation that the unit GDP of Ningbo decreased by 1.6% in the first quarter, the government held the conference of consumption decreasing and efficiency increasing for enterprises in May. The conference clearly states the target requests, key content and main measures for consumption decreasing and efficiency increasing, introduced “The working program of service enterprises on consumption decreasing and efficiency increasing”, highlighted five service points like help to implement the policy, promote the technology innovation, assist to develop the market, optimize the development environment, and provide service for consumption decreasing and efficiency increasing, built up the enterprises classification management system for A, B,C kinds, carried out the comparison, analyses and report for monthly power use and output. Second, strengthening the regional energy conservation early warning and monitor. Implementing the early warning system of regional energy conservation target completion progress, dividing four levels as red, orange, yellow and blue and early warning per month. In 2014, except for the slow completion progress of energy conservation in Beilun, the completion in other regions was normal. Third, strengthening the monitor and analyze of power supply and usage. Formulating and implementing” Notice on Ordered Power Consumption of 2014”, compiling “Plan on Ordered Off-peak power Consumption of Ningbo”. As the Binjinte High Voltage Transmission Line put into service, and the new generator set put into use in Zhejiang province, the power supply situation of Ningbo goes smoothly along the year, with spare power available. Therefore, the emergency responsible plan on orderly power use is started. Fourth, promoting the building of energy comprehensive management service platform. Further implementing the function of energy comprehensive management service platform, building up the annual evaluation and assessment system for the platform, provide online monitor of energy consumption for 10 key enterprises and power use for 130 enterprises. Active promoting the construction of energy management sub-platform in country (city) district and industry. At present, 8 country (city) in Ningbo has set up the personalized energy management service sub-platform such as Yuyao, Zhenhai and so on. Fifth, actively exploring the evaluation work of resource occupancy output. Formulating and issuing “Guidance (Trail) on Promote the Industry Quality and Efficiency by Adopting Output Performance and Resources Occupation Assessment” (Y.Z.F. 2014 No. 235). Giving priority to country (city) area, evaluate the indicator for enterprises’ land use, energy use, emission, tax and added value. The evaluating result will be combined with relevant policy support and resource allocation and guide the further development of enterprises.

**Strengthening the Whole Process Management of Project Energy Assessment**

First is to maintain a strict standard on the project source. In 2014, Ningbo has approved 29 industrial investment energy conservation assessment projects, for which, the planned total investment is RMB 39.34 billion, the total energy consumption is 488,000 tons of standard coals and the average energy
consumption per unit of industrial added value is 0.24 tons of standard coal. 10 energy assessment evaluation projects are reported to Zhejiang Province Economic and Information Commission with a planned total investment of RMB14.74 billion, a total energy consumption of 1.275,000 tons of standard coals and an average energy consumption per unit of industrial added value of 1.45 tons standard coals. The average energy consumption per unit added value of the provincial and municipal evaluation projects is 0.61 tons of standard coals with a good overall controlling situation. Second is to significantly conduct the project energy saving supervision. Ningbo is the first in the country to conduct the industrial investment project energy conservation completion inspection and approval and the energy efficiency supervision work. It has investigated on the progress status of the 146 energy conservation evaluation projects approved from 2011 to 2012 and conducted the energy conservation completion inspection and approval on 61 project, 51 of which passed the completion inspection and approval, 1 of which was urged for rectification for the material change of the construction content and 9 projects failed in the completion inspection and approval for the failure in completing the planned investment. For the 26 projects that have passed the completion acceptance and qualified for the energy efficiency supervision, it conducted the energy efficiency supervision with 7 of which that did not reach the energy using limit value confirmed as the energy over using enterprises and they will be controlled in the enterprise appraising, orderly power utility, high energy consumption project approval and preferential policy enjoying.

Although Ningbo has received good achievements in the energy conservation and the completion and promotion of "Vacating Cage for New Birds" project in the recent years, the basis is not solid enough. Firstly, the industrial restructuring is not obvious, the proportion of tertiary industry in GDP is not increasing and the port-surrounding heavy industrial pattern has not changed. Secondly, the technical energy conservation space is further compressing. Especially with the influences from the global economy downturn, the enterprises' willing to the energy conservation reconstruction investment is decreasing. Thirdly, the enterprises' energy delicacy management skill is not high enough and the energy measurement and statistics are extensive with low energy management system construction and reorganization ratios. Fourthly, the government depends a lot on the administrative measures in the energy conservation promotion, elimination of slow-runners and the "Vacating Cage for New Birds" project and is not sufficient in application of the laws, standards, economic measures and regulative innovations.

**Primary Contents of the Future Energy Conservation and "Vacating Cage for New Birds" Project in the Future**

Use the scientific viewpoint of development as the direction, energy conservation obligation target as the guidance, focus on the energy conservation purpose responsibilities of the key areas, industrial and enterprises, correctly resolve the relationship between the growth promotion, restructuring transformation and the energy conservation, further conduct the energy efficiency enterprise actions, strengthen the structuring energy conservation, technical energy conservation and energy conservation management support function so as to take "ten hundred thousand" special action as the basis (ten major industrials promotion, a hundred enterprise energy conservation standard, and a one thousand aluminum shell induction furnace updating, ten thousand injection molding machine motor efficiency promotion), further strengthen the energy conservation restructuring, elimination of downturn output and energy conservation supervision, gather the social energy conservation effect to contribute to the economic and social development of Ningbo.
Primary Measures to Promote the Energy Conservation and "Vacating Cage for New Birds" Project

Detailed Implementation of Energy "Two-Control" Purpose Responsibilities

First is to combine the energy conservation purpose completion progress and take different but collective energy conservation purpose solutions to confirm the regional annual energy conservation purposes, sign (send) the energy conservation and "Vacating Cage for New Birds" purpose responsibility agreements with 15 counties (cities) governments (management committees), 14 municipal departments and 175 municipal enterprises, continue to promote the individual and scientific assessment index. Second is to properly control the total energy consumption amount and put it as an important index for the counties (cities) governments (management committees) and the key enterprises and to strengthen the total energy amount controlling concept.

Strengthening the Energy Conservation Purpose Early Warning Surveillance and Control

First is to set up the working mechanism, establish the staffs of the economic and information commission, municipal statistics bureau and Ningbo Power Supply Bureau, strengthen the statistics, surveillance and analysis of the output, added value, energy consumption and power consumption. Second is to promote the early warning report mechanism, set up the monthly regional and key enterprise energy conservation purpose and early warning report mechanisms, and to timely conduct the supervision, inspection and guidance work. Third is to emphasize the key points, set up energy conservation purpose temporary adjustment plans for the counties and cities with difficulties in completing the purposes and slow progresses and timely start the project in compliance with the target completion progress; put key supervisions, energy surveillance and services on the enterprises of lower output growth; for the later 20% enterprises whose output growth is lower than the energy consumption growth will be eliminated from the advanced enterprise appraising and preferential policy enjoying qualifications and listed to the orderly power using limits.

Deeper Excavation of Enterprises' Energy and Water Conservation Potentials

It is planned to implement over 600 key energy conservation restructuring projects, aimed to save over 600,000 tons of standard coals. It plans to organize and execute the injection molding machine efficiency promotion actions, eliminate and update over 2000 downturn injection molding machine motors, organize over 200 enterprises to implement the cleaning production assessment, promote the energy conservation, pollution decreasing and efficiency promotion, organize over 30 enterprises to save more water, conduct water balance test, strengthen water basis management level and further promote the water resource using efficiency. Besides, it will strengthen the guidance, promote the overall using of the resources, expanding the promotion scale of the new energy saving products and technologies and will hold over 6 promotion conferences. It will promote the enterprise energy management center and management system certification work, optimize the detailed management skill of the enterprises, perfect the market energy comprehensive management service platform and areas, promote the power using and online supervision work of the key enterprises.

Expansion of the Elimination Scale of Outdated Output and "Vacating Cage for New Birds"

Continue to execute the differential power price policies for the stainless steel smelting enterprises and casting industry, conduct 2014 annual power tax evaluation for the casting enterprises and decide to execute the differential power price enterprise list. Overall carry out "low small scattered" industrial regulation and promotion action, plan to promote over 15 key "low small scattered" industrial regulation projects, comprehensively apply the administrative, law and economic measures, promote the industrial transformation in compliance with requirements of "restructure to promote one group, regulate one group and eliminate one group". To execute aluminum shell intermediate frequency furnace elimination plan, promote casting enterprise equipment level, promote the elimination work of Dongteng Paper, Yierlan Knitting, strengthen the low efficiency land using investigation, set up the database, increase redevelop and reuse scales and try to vitalize 145,000,000
mu stock land. To execute key pollution industrial regulation and illegal project elimination plan, promote the key pollution regulation project construction and try to make the primary contaminant discharge reach the following targets.

**Further Promotion of the Energy Conservation Supervision and Services**

To further execute the fixed assets investment project energy conservation evaluation and assessment work, strictly control the high energy, heavy pollution and low output project approval, execute energy conservation completion acceptance and project energy efficiency supervision measures, apply the inspection and supervision results, urge the enterprises to timely restructure, carry out the regular supervision and special supervision combination, implement a-hundred enterprise energy consumption standard action and take punishment measures over the enterprises beyond the limits. And to execute the "supervision, diagnosis and service" actions based on the motors, furnaces and waste heat and pressure using.

**Active Exploration of the New Energy Marketization Management Mechanism**

To study the advanced cities' experiences in energy resource allocation, actively apply the new mechanism and measures in the energy trade, regional energy control and regional coal amount control and energy marketization allocation, research and stipulate the "13th five-year" energy conservation and elimination plan and strive for new energy conservation approaches.

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