

# Analysis and Research on Industry Investment Opportunities under the Background of Carbon Neutrality

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## Abstract

Achieving carbon peaks and carbon neutrality are the inherent requirements for China to achieve sustainable and high-quality development, and it is also an inevitable choice to promote the building of a community with a shared future for mankind. In order to achieve this goal, the government will focus on promoting the optimization of the industrial structure, advancing the adjustment of the energy structure, supporting the research and development and promotion of green and low-carbon technologies, improving the green and low-carbon policy system, and improving the laws, regulations and standard systems, etc., research and propose targeted and operability Policy initiatives. Based on this background, this article analyzes and researches industry investment opportunities from three perspectives: traditional energy consumption industries, new energy and new energy automobile industries, and environmental protection industries.

## Keywords

Carbon Neutrality; Industry Impact; Investment Opportunities.

## 1. Introduction

Carbon neutrality is driven by both international trends and domestic policies. As the country with the largest carbon emissions in the world, China's carbon emissions in 2019 were 9.826 billion tons, accounting for 28.8% of the world's total emissions. China's carbon neutral timetable is also very clear: by 2030, the carbon emission intensity will be reduced by more than 65% compared with 2005, and carbon dioxide emissions will strive to reach the peak before 2030, and strive to achieve carbon neutrality by 2060. It should be noted that the EU peaked in carbon in 1979 and the United States peaked in 2005. It took 71 years and 45 years to go from the peak to net zero emissions respectively. China's timetable of "30 peaks and 60 neutrals" means that the carbon neutralization task in the next forty years will be tight and heavy, and will face a much steeper neutralization slope than Europe and the United States in particular.

Due to the heavy tasks, tight time and pressure of the "carbon neutral" goal, it is far from enough to promote carbon emission reduction step by step. In the future, we need to improve and unify our understanding, and adopt stronger determination and perseverance. Measures to promote the realization of the "carbon neutral" goal.

### 1.1. Traditional Energy-consuming Industries Take Multiple Measures to Reduce Carbon Emissions

#### 1.1.1. Steel Industry

Short-term production shrinkage and Long-term structural adjustment. China's urbanization rate still has room to rise, steel demand is stable, and supply will be significantly limited in the context of carbon peaks and carbon neutrality. The overall industry structure will shift from being dominated by long processes to being dominated by short processes.

### **1.1.2. Non-ferrous Metal Industry**

Recycled aluminum and hydropower aluminum plants have obvious competitive advantages, and the new energy reform will significantly increase the demand for Non-ferrous products in the medium and long term.

### **1.1.3. Cement Industry**

Energy-saving effects are limited, and output control is still a necessary option for the cement industry to achieve carbon neutrality.

### **1.1.4. Coal Industry**

The medium and Long-term demand for coal will drop significantly, and transformation is a top priority for coal enterprises.

## **1.2. New Energy, New Energy Automobile Industry Supply and Demand Space Accelerates Expansion**

The installed capacity of photovoltaic and wind power ushered in a new round of upward cycle; nuclear power entered a positive development window period; the new energy automobile industry continued to grow at a high level.

## **1.3. The Long-term Strategic Significance of the Environmental Protection Industry has Increased**

Focus on areas such as green recycling industry chain construction, carbon monitoring and upgrading, clean heating, waste incineration, etc.

## **2. Industry Impact and Investment Opportunities in the Context of Carbon Neutrality**

The achievement of the goal of carbon neutrality in 2060 will force the acceleration of China's energy transition. On the one hand, we will take multiple measures in the traditional Energy-consuming industries to effectively reduce carbon emissions in the short and medium term. On the other hand, we will also adopt measures for green and low-carbon technologies. Large-scale research and development, application and promotion will gradually get rid of the dependence on fossil fuels and coal-fired power plants, and realize major changes in the social and economic development model and energy structure. This will set off a huge wave in many industries and industries, bring about medium and Long-term industry changes, and create corresponding investment opportunities. The following is an analysis from three aspects: traditional energy consumption industry, new energy and new energy automobile industry, and environmental protection industry.

### **2.1. Traditional Energy-consuming Industries Take Multiple Measures to Reduce Carbon Emissions**

#### **2.1.1. Short-term Output Contraction in the Steel Industry, Long-term Structural Adjustment**

carbon emissions through production compression. On January 26, 2021, the Ministry of Industry and Information Technology stated that the reduction of steel production is an important measure for China to achieve its carbon peak and carbon neutral goals. The Ministry of Industry and Information Technology will gradually establish a restraint mechanism to ensure a full year-on-year decline in steel production in 2021. The current steel output still maintains a high growth trend year-on-year, and it is a long way from the year-on-year decline in steel output. Therefore, we expect the steel industry to usher in more severe supply suppression in 2021. At present, the specific output figures for compression have not yet been

announced, but with the accumulation of previous supply-side reform experience, it is expected that this year's output compression will be faster.

Tangshan is China's largest steel production town. In 2020, Tangshan's crude steel output will be 144 million tons, accounting for nearly 14% of the national output. Since the beginning of this year, Tangshan's production restriction policy has been issued frequently. Since the beginning of this year, Tangshan has initiated five second-level emergency responses. In early March, Tangshan concentrated on the "Tough Month" of comprehensive air pollution control, and implemented strict emission reductions for 100 key gas-related enterprises. Management and control, re-revision of approved emissions, requiring an overall emission reduction of not less than 45%, the implementation of this round is stronger and stronger than the past, supply contraction is expected to heat up again, the market generally predicts that Tangshan's production capacity will be significantly compressed in the future this year.

The current steel production compression is beginning to show signs: In the context of relatively stable demand, in mid-March, the social stock of five major steel products in 20 cities was 17.28 million tons, a month-on-month decrease of 490,000 tons, a decrease of 2.8%, and the first month-on-month decline this year; An increase of 9.98 million tons from the beginning of the year, an increase of 136.7%; a decrease of 2.72 million tons from the same period last year, a decrease of 13.6%.

In the medium and long term, the green transformation and upgrading of the steel industry is the main way to achieve carbon emission reduction. At present, carbon emission reduction technology is not yet developed, and the industry is not yet complete. The development, transportation, and storage of clean energy ironmaking such as hydrogen energy all need to be developed. Carbon capture, carbon utilization, carbon sequestration technology breakthroughs, cost control and other aspects need to be perfected, and it is difficult to popularize in the short term, but in the long run, the green transformation of the steel industry is the Long-term plan for carbon emission reduction.

In the long run, it is expected that the steel industry will carry out supply-side structural reforms to optimize production capacity, improve energy efficiency, and shift the steel industry from rapid growth to a high-quality development track. In the process of transformation of the steel industry, leading companies will have greater advantages in terms of economies of scale, energy conservation and environmental protection technology reserves, or capital strength.

Supply shrinks under the pressure of reducing emissions, demand rises due to economic recovery, and steel prices are expected to rise. According to data from the China Iron and Steel Association, the downstream demand for steel in 2020 will mainly come from the construction (real estate, infrastructure) and machinery industries, which are highly dependent on the prosperity of the manufacturing industry. The sales data of real estate, automobiles, and machinery and equipment from January to February are good, and they have recovered or even exceeded the level of the same period in 2020, and the performance of the investment side exceeded market expectations. At the same time, the current global economic recovery is in good shape, and all are in a significant recovery trend. China's PMI is 50.6, which has been in the recovery range for twelve consecutive months. At present, IMF, OECD, World Bank and other organizations have given better expectations for the global economy in 2021. Under the expected economic recovery, downstream demand will be effectively supported.

Affected by the compression of steel supply, it is expected that upstream iron ore import demand will shrink and prices will be suppressed. As the carbon peak and carbon neutrality are officially written into the two sessions, the steel industry's output contraction trend is clear, and the demand for upstream iron ore is expected to shrink. In 2020, domestic iron ore imports will reach 5.1 billion tons. As the demand for iron ore weakens and iron ore prices are under pressure, the profitability of steel mills is expected to pick up significantly.

The steel industry welcomes investment opportunities in the context of carbon neutrality. On April 2, 2021, the "Iron and Steel Industry Carbon Peaking and Carbon Reduction Action Plan" is being prepared, and a revised and improved draft has been formed, preliminarily determining the industry's peaking targets and key tasks. The carbon peak target for the steel industry is initially set as: by 2025, carbon emissions will be peaked; by 2030, carbon emissions will be reduced by 30% from the peak, and carbon emissions are expected to be reduced by 420 million tons. If there is no significant improvement in technology Under the circumstances, it is predicted that steel production in 2030 will drop by more than 20% compared with the current situation. However, when the demand side is relatively stable, there will be a supply and demand gap of about 20% in 2030, and the steel industry will periodically experience a significant decline.

The four nodes for the steel industry to achieve carbon peaks and carbon emission reductions are: carbon emissions peak in 2025; total carbon emissions will decline steadily in 2030; there will be a substantial decline in 2035; By 2060, China's steel industry will be deeply decarbonized. The plan also proposes the importance of hydrogen smelting technology. It is understood that the hydrogen metallurgical technology that uses hydrogen instead of carbon as a reducing agent can greatly reduce carbon dioxide emissions, up to 85%.

On December 31, 2020, the Ministry of Industry and Information Technology of China issued the "Guiding Opinions on Promoting the High-quality Development of the Iron and Steel Industry" (Draft for Solicitation of Comments). The specific goal is to strive to achieve a reasonable industrial layout, advanced technology and equipment, and outstanding quality brands in the iron and steel industry by 2025, High level of intelligence, strong global competitiveness, green, low-carbon and sustainable development pattern. The completion rate of the industry's ultra-low emission transformation has reached more than 80%, and all enterprises in key areas have completed the ultra-low emission transformation. With many policy trends, steel, as a key focus industry for carbon neutrality, will usher in more investment opportunities.

### **2.1.2. The New Energy Reform Will Significantly Increase the Demand for Non-ferrous Products in the Medium and Long Term**

The energy consumption in the electrolytic aluminum production process is dominated by thermal power. Under the background of carbon neutrality, thermal power aluminum plants are "weakening", and hydropower aluminum plants may be developed. According to public data from the China Nonferrous Metals Industry Association, China's Non-ferrous metal carbon dioxide emissions will be about 650 million tons in 2020, accounting for 6.5% of the country's total emissions. Among them, the carbon dioxide emissions of electrolytic aluminum are about 420 million tons. In the process of electrolytic aluminum production, electricity emissions account for 63% of carbon emissions, which is the main carbon emission process. Energy structure distribution of electrolytic aluminum operating capacity in 2019: self-provided thermal power 65%, grid power thermal power 21%, hydropower 10%, wind power 2%, nuclear power 1%, solar power 1%, it can be seen that electrolytic aluminum production is currently dominated by thermal power The use of thermal power production accounted for 86% of the total. The carbon dioxide emissions produced by the electrolysis process of 1 ton of thermal power aluminum and hydropower aluminum are 11.2 tons and 0 tons, respectively. It can be predicted that, in the context of carbon neutrality, the hydropower production method, which emits far less carbon emissions than thermal power production, will be further developed in the future, and the current thermal power production method will be weakened. Recycled aluminum may become the biggest winner in the context of carbon neutrality: using recycled aluminum production, carbon emissions per ton is only 0.21 tons of carbon dioxide, which is significantly lower than that of primary aluminum, and recycled aluminum has obvious

advantages in reducing consumption. In the context of carbon neutrality, the use of recycled aluminum production is of great significance to the industry's carbon emission reduction, and the recycled aluminum industry is expected to develop further.

There is a big gap between the development status of China's secondary aluminum industry and developed countries, and the development space is broad. In 2019, the domestic secondary aluminum production reached 7.15 million tons, equivalent to 19.29% of the total output of primary aluminum and secondary aluminum. In recent years, the proportion of domestic aluminum scrap recycling has gradually increased, and the aluminum recycling volume has shown a rapid growth trend, but it is still in line with the international level. Big gap. Research on secondary aluminum in developed countries started early. Since 2002, secondary aluminum production in the United States has surpassed primary aluminum and continues to grow, accounting for nearly 40% of total supply. In 2017, secondary aluminum production in the United States accounted for approximately 81% of total production. Japan's secondary aluminum output accounts for as much as 100% of the total output.

Small hydropower is shut down, large hydropower is difficult to add, hydropower production of electrolytic aluminum is difficult to increase in the Short-term, and existing hydropower has advantages in producing electrolytic aluminum. The electrolytic aluminum industry consumes huge amounts of electricity and cannot achieve its own carbon neutrality, but it can reduce emissions through new energy sources. At present, photovoltaic technology cannot meet the electricity demand of the electrolytic aluminum industry, and the hydropower characteristics can meet the needs of electrolytic aluminum enterprises. At present, China's hydropower production accounts for only 10% of electrolytic aluminum, which is significantly lower than the global average of 25%. In the 13th Five-Year Hydropower Development Plan, it is clearly established that small and medium-sized hydropower destroys the ecological environment with a penalty exit mechanism. According to incomplete statistics, more than 7,000 small hydropower stations will be closed by 2022. Due to the need for resettlement and coordination of various departments for large-scale hydropower stations, the construction period is generally long and it is difficult to realize in the short term. Therefore, it is difficult for hydropower to produce electrolytic aluminum with new capacity in the short term, and the current aluminum plants with hydropower production capacity have natural advantages and are expected to usher in Davis's double-click.

In the long run, demand for Non-ferrous products is expected to be stimulated by new energy policies. The average amount of copper used in renewable energy systems is 8-12 times that of traditional power generation systems. Wind turbines use about 6 tons of copper per megawatt, and solar photovoltaic power generation uses about 4 tons of copper per megawatt. At the same time, the construction of power batteries and charging piles for new energy vehicles is also extremely dependent on metals such as lithium and nickel. Therefore, if the government launches large-scale infrastructure projects, considering that its funds will mainly flow to the development of green energy, the medium-term demand for Non-ferrous metals such as copper, lithium, and nickel will increase substantially.

From the perspective of historical valuation comparison, the current valuation does not fully reflect the Non-ferrous cycle value. The current valuation is still more than 10% compared to the 3.5-3.7 times PB of the supply-side reform in 2017. In 2017, the price of aluminum was at the level of US\$2,100 and the price of copper was around US\$6,900. Compared with the 5.5 times PB of the large infrastructure construction in 2009, there is more than 70% of the space. In 2009, the price of aluminum reached the level of 2500 US dollars, and the price of copper was at the level of 10,100 US dollars. The current aluminum price is at US\$2,200 and copper is at US\$9,100. The valuation of the Non-ferrous sector does not fully reflect the increase in the price of Non-ferrous products.

### **2.1.3. Energy-saving Effects are Limited, and Output Control is Still a Necessary Option for the Cement Industry to Achieve Carbon Neutrality**

The cement industry is expected to achieve carbon neutrality by controlling production. Different from other industries, currently 60% of the carbon emissions in the cement industry are generated by the decomposition of limestone, 35% is coal, and the rest is electricity. The carbon reduction effect brought about by energy conservation is far from enough. The industry generally believes that the current core is the amount of limestone. However, due to the characteristics of cement, the output of limestone will decrease if the amount of limestone decreases. Therefore, the output of cement is expected to be compressed.

### **2.1.4. Coal: The Medium and Long-term Demand for Coal Will Drop Significantly, and Transformation is the Top Priority for Coal Enterprises**

China's energy consumption is dominated by coal, and the development of new energy needs to be promoted gradually. As a traditional energy source, coal has the advantages of being independent of seasons and climate, economical, reliable, and stable. Therefore, the coal industry still has obvious advantages in the energy sector before carbon peaks. As the development of coal resources develops towards scale and intelligence, and new energy cannot solve related problems in the short term, it also provides objective conditions for coal development.

However, in the context of carbon neutrality, the overall year-on-year decline in coal demand has been confirmed. Although this trend will lead to a significant increase in the concentration of the entire industry, coal companies will gradually lose if they do not transform and upgrade or carbon capture technology has not achieved significant development. Competitiveness disappears completely under the decarbonization of production in the whole society.

In the context of carbon neutrality, the coal industry has new opportunities for transformation. Leading companies have obvious advantages in actively participating in the transformation. The main directions are: equity investment or independent operation of photovoltaic, wind power and other industrial chains; vigorously develop high-end coal chemical projects; Enter the fields of hydrogen energy and energy storage. However, this is more biased towards the scope of venture capital, and the Long-term valuation of the coal industry will continue to decline significantly.

In the short term, the increase in coal supply is limited, and the pattern of strong coal and weak coke continues. In terms of supply, the Yulin area has imposed strict security checks and Short-term coal supply has been suppressed. Australia's coal imports are still suspended, but the impact of the flood still pushes up coal prices. Indonesia is about to enter Ramadan, and the increase in overseas supply in the short and medium term is limited. The overall coal inventory quickly came to an end after the Daqin line incident, and the inventory has dropped significantly. The current coal price is mainly driven by the demand side. The daily consumption of eight coastal provinces is 1.88 million tons, which is about 100,000 tons higher than the same period in 2019. Coal prices may fluctuate strongly in the short term. In the context of Tangshan Steel Plant's near-term production, the overall coke demand has been significantly suppressed, and the price is relatively weak relative to thermal coal. At present, the production restriction of Tangshan Steel Plant is still continuing. In the future, under the Long-term tone of carbon neutrality, it is expected that the earnings of coke companies will be under Long-term pressure, and it is expected that there will still be downside for valuation.

In the medium and long term, demand for coal and coke may suffer a double kill, and coking coal is relatively better than thermal coal. In terms of thermal coal, thermal power is expected to gradually withdraw from the market from the mid- to Long-term plan. By 2060, new energy is expected to completely replace thermal power, and the demand for thermal coal will gradually disappear. The valuation of thermal coal companies will continue to decline before

the successful transformation, which will be under Long-term pressure. The overall situation of coke is not optimistic. Under the background of carbon peak and carbon neutrality, long-process steel production capacity is expected to be under significant pressure, short-process capacity replacement probability is high, and coke demand is expected to decline significantly. However, in the medium term, there will still be some repetitions in the demand for coke. On the one hand, short-process steel mills are limited by the insufficient amount of scrap steel in China and cannot quickly form a large-scale replacement. While some Long-term steel mills still have room for survival under the background of stable medium and Long-term demand for steel, the demand for coke will decline more slowly than thermal coal.

## **2.2. New Energy, New Energy Automobile Industry Supply and Demand Space Accelerates Expansion**

China's energy supply side still relies heavily on traditional fossil dyes: as of the end of 2019, 68% of China's power generation came from thermal power. From the perspective of energy consumption structure, China's current energy structure is still dominated by traditional energy sources. In 2019, raw coal, crude oil and natural gas accounted for 57.7%, 18.9%, and 8.1% respectively, and the cumulative proportion was 84.7%. At present, a large number of international financial institutions have announced that they will no longer provide loans for fossil energy projects in developing countries. This means that it will be more difficult to obtain new financing for fossil energy projects in the future, and new energy will be the main development direction. In the 30 years of reform and opening, China's crude economic growth has been strongly dependent on energy. In recent years, the marginal benefits of this growth model have gradually diminished. The national level has also actively promoted economic structural adjustment and growth momentum switching, as well as energy structure adjustments. It is also an important part of it. The development of China's new energy industry chain is only just beginning, and there is still broad space in the future.

In the long run, energy technology progress and innovation are the fundamental driving force for energy revolution and transformational development, as well as the key driving force and inevitable choice for achieving the goal of "carbon neutrality". If only the current policies, investment and carbon emission reduction targets are continued, and the traditional energy-consumption industries are only relying on energy conservation and emission reduction, the existing low-carbon/decarbonization technologies will not be able to support China to achieve the goal of "carbon peak and carbon neutrality". Therefore, breakthroughs and innovations in revolutionary advanced technologies must be supported, and the promotion and application of mature low-carbon technologies must be accelerated.

## **3. Analysis of Industry Investment Opportunities in the Context of Carbon Neutrality**

From an investment perspective, we can grasp relevant opportunities in different industries in the context of carbon neutrality in the short, medium and long term:

In the short term, we can focus on the major emission reduction companies and also the major carbon emissions industry sectors. Under the background of the country's strict supervision of emission reduction and energy saving, the industry's backward production capacity has accelerated to clear, and companies with environmental protection capital strength and leading positions in the industry It is expected to benefit significantly from the "new round of supply-side reforms" in the energy industry, focusing on leaders in the steel, nonferrous metals, and building materials sectors.

In the future, the energy structure reform is the general trend. The proportion of new energy in the fields of power generation and heating, construction, manufacturing, etc. will be greatly

increased. The acceleration of the popularization of new energy vehicles in the transportation field is the main way. Industries that can be focused on include: wind power, Photovoltaic, nuclear power and other green energy, new energy automobile industry chain, new energy batteries and supporting charging piles. At the same time, in the final link of carbon emissions, the environmental protection industry can show its talents, focusing on waste classification, waste incineration power generation and other industries.

In the long run, more opportunities for carbon neutrality come from the R&D and application of energy-efficient Energy-saving equipment, transformation of emission-reducing equipment, carbon treatment, green finance, carbon emission exchange, carbon emission rights confirmation and other related fields.

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