

Consider the Energy Sector as an Example for the Investment Transformation of the Industry about the Green Finance System

Yitong Chi^{1,a,*}

¹Malvern College Qingdao266106, Qingdao 266000, China
a. 2130399725@qq.com

*corresponding author

Abstract: The global climate crisis has recently become a critical issue worldwide. Additionally, greenhouse gas emissions from the production of fossil feedstocks are significantly connected with climate change, according to IPCC's AR6 report. Moreover, the most familiar to people is carbon dioxide. The Paris Deal, a second globally enforceable climate agreement following the Kyoto Protocol, was eventually concluded during the 2015 Paris Climate Conference in France. Following the publication of such a policy, several nations worldwide began to enact carbon peaking and carbon neutrality policies, leading local governments to issue regulations for various industries and even businesses. As a result, the investors would undoubtedly alter their investing techniques to increase their profits. The energy and transportation industries were the most impacted of all the industries that would be impacted. In order to reduce carbon emissions, this article will explore how investments in the energy and transportation sectors have changed. This article would use businesses as an example to make it more explicit and understandable.

Keywords: green finance, carbon pricing, energy industry

1. Introduction

The most crucial thing to accomplish as soon as possible is to reach net zero greenhouse gas emissions by the second half of the century, which is the broad goal of the Paris Agreement, which is to limit average global warming to less than 2°C, compared to pre-industrial levels, and strive for 1.5°C. The difficulty of lowering global greenhouse gas emissions to 40 gigatons by 2030 from 50 gigatons in 2010, or less than ten gigatons, was also mentioned. A global action inventory will be carried out every five years beginning in 2023 to encourage nations to step up their own initiatives and cross-border collaboration to accomplish the long-term global aim of combating climate change. Every industry must reduce its carbon emissions as much as possible to comply with such laws, which narrow to each company. According to data from the World Resources Institute (WRI), fifty-four nations have already hit their peak carbon emissions. The United States, Russia, Japan, Brazil, Indonesia, Germany, Canada, South Korea, the United Kingdom, and France are among the top 15 carbon emitters in 2020 that have already attained carbon equilibrium. The European Union, consisting of 27 nations, has already hit a carbon peak.

Moreover, this reality just increases the pressure on nations like Mexico, Singapore, and China that have not yet achieved their peak carbon output levels. There is no time to waste in achieving carbon neutrality since the earth's climate problem is getting worse. The four industries with the highest carbon emissions are transportation, architecture, industry, and energy. Moreover, practically every industry is affected by the energy trade. No nations have been able to exchange carbon emission rights as quotas with one another, but domestically, any province could trade. One way to price carbon is through carbon trading. Businesses trade emission rights through the market to balance out their emissions to manage total carbon emissions at a cheap cost. The carbon market would have a variety of effects on businesses.

The managerial level comes first. The enterprises are required to implement a new management system. Additionally, there are updated specifications for the functional departments and the performance assessment method. Second, let us talk about the amount of output and operation. Such a program would lower manufacturing costs or provide additional advantages to the enterprises it would affect. More precisely, it would alter the production plan or how resources are used and raise or cut management costs. The degree of renewable technologies comes in third. Based on the fact that low-carbon sectors are developing and related to the business scale and strategy of the company. Businesses must create new energy technologies, goods, and equipment manufacture, among other things. Become a group of essential technologies with exclusive intellectual property rights—furthermore, the effects of the carbon policy on Chinese businesses throughout the medium to long term. Three outcomes are possible. First, let us talk about how quota allocation affects businesses. The second is how the punishment system affects the business. Thirdly, the effects of preserving growth and reducing emissions on businesses.

2. Literature Review

2.1. What is Carbon Trading?

According to the definitions of carbon trading and green finance, the right to release carbon dioxide was the quota that provinces may exchange with one another, forming unquestionably a market for carbon trading. Provinces might determine the price of the right on such a market, and other provinces that genuinely needed it may purchase it. Both domestically and internationally, the same idea applies. For instance, Shanxi is one of the top provinces in China where carbon emissions are released. Thus Shanxi businesses may want greater carbon emission rights than they initially did. As a result, Shanxi may purchase the right from other provinces that choose to sell it on the market for carbon trading.

2.2. Background of Carbon Policy

Globally, the environment has suffered because of climate change. For instance, the whole Tuvaluan population was displaced due to increasing sea levels. Moreover, the glaciers of Antarctica are melting. Numerous such harms continue to occur worldwide at an alarmingly rapid rate. In 2020, four industries will make up most of the domestic resource components. 78% of the total was accounted for by the energy industry, with 14% going to industrial engineering in second place. Agriculture accounted for just 7% of the total, while trash made for the least, at 2%.

2.3. The Can or Cannot of Carbon Pricing

There exist lots of issues about "carbon pricing." China International Capital Corporation Limited laid out several apparent problems, such as: Is it appropriate to include different industries in the same carbon market? Should carbon emission rights be required to face the same carbon price if they

are invested in different production activities? Will there be any unexpected spillovers from a single carbon market? Are there similar or different carbon-neutral policy instruments worth choosing outside the carbon market? The article "The same carbon emission, should not be unified carbon pricing" [1-9], published by CICC on the internet, illustrates some points. The Obama administration calculated the carbon cost in 2010, which was discounted to about \$26 / ton of carbon in 2020. The carbon cost after the updated calculation in 2016 was \$42 / ton of carbon. In 2017, shortly after taking office, Trump updated the calculation of carbon cost again, and the result showed that the carbon cost in the United States was less than 7 dollars/ton of carbon. Whether opposing or supporting emission reduction, American decision-makers support their views through the calculation of carbon cost, which reflects the vital significance of carbon cost for setting carbon prices under the mainstream cognitive framework. When the Obama administration determined the carbon cost in 2010, the figure was discounted to be around \$26 per ton of carbon in 2020. The cost of carbon following an updated computation in 2016 was \$42 per ton of carbon. Trump revised the computation of the cost of carbon again in 2017, not long after becoming office, and the outcome revealed that the cost of carbon in the United States was less than \$7 per ton of carbon. The computation of carbon cost, which represents the relevance of carbon cost for establishing the carbon price under the mainstream cognitive framework, is used by American decision-makers to support their positions, whether they favor or against emission reduction. In some ways, determining the cost of carbon may be seen as an essential foundational task of the entire carbon neutrality policy because carbon pricing is considered the most powerful weapon. However, there are significant discrepancies among academics and a need for more agreement among decision-makers about this crucial basic information. For instance, the well-known climate economist Nordhaus estimates that the cost of carbon will be around \$37 per ton of carbon in 2020, while Stern, another economist whom Nordhaus criticized about the measurement of the carbon cost, estimates that the cost of carbon will be around \$266 per ton of carbon. Based on the green premium, our parity carbon cost in China is around 377 yuan (about US \$58) per ton of carbon.

2.4. Innovation and Research about Clean Carbon Energy in Other Countries

conditions in Japan. A non-binding agreement known as "the plan of hydrogen energy cooperation overseas" was signed in November 2003 by the governments of Japan, China, the United States, and 13 other countries. The basic concept behind this strategy was using hydrogen energy as fuel for vehicles. In 2013, Japan's national plan set the development of hydrogen energy as a goal. Japan also popularized the "3E+S" concept, which considers a "hydrogen energy society" as its central tenet.

In 1973, Japan established the Hydrogen Energy Association with an emphasis on academic scholars. Moreover, the development of hydrogen energy in Japan was symbolized by this specific group. In 1990, automakers, including Toyota, Honda, and Nissan, started working on fuel-cell cars. Hydrogen energy has evolved through time into a procedure that impacts the whole supply chain.

Australia and Japan are collaborating on a project. They began the world's first lignite-based hydrogen-generating pilot project. In 2020, an experiment to test the viability of converting lignite into hydrogen began. The hydrogen would then be liquefied and shipped to Japan.

3. Discussion

I will look at how the investment pattern has altered in light of the demand for carbon emission and carbon neutrality regulations in this debate. Moreover, I would examine several situations to make such alterations as evident. The mismatch between the positions of the energy and transportation sectors in the global economy following the change in the economy caused by carbon emissions will also be brought to light. According to my research, I believe the following two industries will have

the most significant rise in investment:

1. clean energy industry. Two examples of developing energy businesses are hydrogen and renewable energy. Under the pressure of carbon emissions, businesses in the energy sector, especially those in the transportation sector, are compelled to introduce some clean energy to replace the original non-regenerated energy, such as fossil fuel. These renewable energy businesses would profit significantly and draw in more capital.

2. The sectors that make electric cars. An instance on the internet uses 10,000 as the unit of measurement to show the global sales of electric cars. Sales of electric vehicles indeed increased throughout that time, from 320,000 in 2014 to 6500,000 in 2021. It is impossible to argue against the recent rise of the electric vehicle industry as being very positive. Due to how much the technology and characteristics of these cars remind us of carbon emissions, investments will be made in this industry.

3.1. What Are the Outcomes of Firms Being Transformed?

Each business and industry has a distinct history, and the transformative problems they face are no different. For instance, if a corporation wants to migrate from a non-renewable sector to one that uses renewable energy but lacks the means to do so. It is notably harder for companies in the traditional energy sector, such as mining companies. Because transformation is expensive, some organizations may fire employees to collect the required finances. This would increase the country's unemployment rate and harm the economy as a whole. During such a change, every choice a corporation makes is critical. If the financial health of competing businesses is excellent or even somewhat better than this one, the latter will lose in such a competitive market. Therefore, from a commercial standpoint, all enterprises, except those in the clean energy and electric car sectors, would be influenced by how long and how much the change would take. Investment risk is the second. Investors could go well or poorly.

3.2. What Can Investors Get?

If businesses effectively transition, there is a chance for continuing expansion and only a brief window of opportunity for financial loss; yet, such a window would not cause them to disappear from the market. Thus, businesses would disappear from the market if they did not adapt. Last are the extra benefits of carbon emissions. Firms may participate in more excellent carbon trading with other businesses through bankers because of the massive decrease in carbon emissions brought on by green energy, which might increase their profitability.

3.3. Some Examples Firms of Carbon Neutrality in Domestic

GCL Group Co., Ltd. was founded on October 24, 2011, and is represented by Wang Dong. It is registered at 199 Jinfeng Road in Science and Technology City in Suzhou High-tech Zone. Its general projects include investing its own money, providing asset management services for that investment, selling solar heat utilization equipment and products, providing enterprise management consulting, developing software, installing general mechanical equipment, and providing information technology consulting services. Technical services include technology development, technology consultation, technology exchange, technology transfer, and technological innovation. Based on its industrial advantages, GCL Group actively participates in the national "Belt and Road" Initiative and supports the globalization of green energy. Incubators and R&D facilities for GCL have been established in Japan, Israel, the United States, Shanghai, Nanjing, Xuzhou, and Suzhou in China. The clean energy sector has branches in Vietnam, Indonesia, Sri Lanka, Saudi Arabia, and Turkey and operates across North America, Europe, Asia, Oceania, the Middle East, and other areas. The most

significant oil and gas projects are being developed in Ethiopia and Djibouti in East Africa. It is also increasing its clean energy investments. Since its founding 32 years ago, the GCL Group has remained committed to the advancement of businesses utilizing science and technology, followed the path of digital empowerment and green development, and concentrated on the development of silicon materials, carbon materials, lithium materials, and other technological innovations in the industrial chain. In photovoltaics, the original GCL polycrystalline silicon technology effectively overcame a foreign monopoly, launched, and propelled the photovoltaic Internet from a high-priced to a parity-and-low-price age. Granular silicon, perovskite, semiconductors, positive electrode materials, and harmful electrode materials are a few of the group's innovative zero-carbon frontier core technologies driving the industry's iterative development. It is China's oldest and most technologically advanced private electric power company, and it leads the sector in terms of installed clean energy; it possesses a complete vertical integration of the PV industrial chain; In order to carry out central national science and technology special 02, collaboration with the national integrated circuit industry investment fund was approved by the National Development and Reform Commission. This was done in conjunction with the ministry and a small number of domestic companies with expertise in integrated circuit electronic grade polysilicon, 12-inch wafers, big wafer area "Chinese core" related materials, and production capacity of innovative businesses.[10] This business has consistently adhered to a carbon emission and carbon neutrality strategy and has served as an excellent model for other Chinese businesses.

Not only in China but also include tons of international firms. Foreign businesses like Honeywell, Dow, Johnson Matiford, Air Liquide, SKF, Novis, Johnson Controls, Visa, and others have signed cooperation projects in China and led the way in implementing cutting-edge low-carbon technologies there. Among them, the most noticeable were Sinopec Capital and Johnson Matthey. They have signed a memorandum of collaboration to investigate collaborative opportunities for fuel cells, decarbonization technologies, green and blue hydrogen, and circular economy enterprises in China. Johnson Matthey will grow its business in this cooperation with Sinopec while developing and promoting low-carbon solutions to assist China in being carbon neutral by 2060. Johnson Matthey is a significant manufacturer of autocatalysts in China, one of the biggest platinum group metal refiners, a pioneer in syngas and fuel cells, and the country's first widely used manufacturer of membrane electrodes. At the 2022 Beijing Winter Olympics, a shuttle bus powered by a membrane electrode assembly was displayed. Green and blue hydrogen is a significant component of the carbon emission and carbon neutrality policy. Cause clean energy like theirs is one of the most efficient and suitable methods to solve the issue and problem of emitting carbon.

4. The Rise of the Carbon Pricing Problem

IMF and OECD have put up a proposal to address the issue of carbon pricing on a global scale. IMF host Kristalina Georgieva advised at the Venice International Climate Conference to integrate historical responsibility for emissions with the development process, raise the standards for carbon pricing in the G20 countries that emit the most carbon dioxide, and establish a floor price for carbon. She also established a floor level of \$75, \$50, and \$25 for each of the three categories of the six G20 members' economies: developed (including the USA, Europe, Canada, and the UK), high-income and developing market economies (China), and low-income emerging economies (India).

IMF and OECD emphasize that carbon pricing is the primary method against climate change globally and try to bedim "responsibility of reducing carbon dioxide"using "responsibility of carbon pricing."

5. Conclusions

This paper proposed a framework for the background of carbon emission and neutrality policy, pointed out the possible transformation tendency of the energy industry and laid out industries that are promising under such background. For this purpose, I used some graphs and examples worldwide to prove such a prediction, which has proven to be a good choice for this task. Furthermore, I allocated many efficient and symbolized examples domestically and overseas to clarify the points of the argument. In future work, I plan to improve my work by focusing more on the international area to accept more polybasic ideas about carbon neutrality.

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