

# A Study of How Soaring Energy Prices Affect the Economy

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## ABSTRACT

Energy issues can reflect the productivity of the global market, thereby indirectly showing the state of the global economy. The issue of energy prices is a topic that deserves attention and is of vital importance to the future development of the world. This paper aims to analyze price trends and supply issues in the energy market and analyze the reasons behind the surge in energy prices. This article explains the price fluctuations and consumption costs of manufacturing and commodities behind the rise and fall of energy prices, as well as the main purpose of energy transition and reduction of carbon emissions. This paper provides an overview of the main drivers behind the current price increases and their consequences.

**Keywords:** Energy price, Economy, Development, Trend, Energy transition.

## 1. INTRODUCTION

In the past few months, the prices of natural gas, coal and electricity have risen to their highest levels in decades. The increase in the number is comparable to the soaring number of infections in the epidemic. The price of natural gas in Asia has risen by as much as 1,000% compared to last year [1]. These increases are caused by many factors, but it is incorrect to place responsibility on the clean energy transition.

A variety of unprecedented factors are simultaneously disturbing the global energy market. In many ways, soaring energy costs and supply chain congestion all over the world stem from the same problem, but the excessive growth in demand has encountered supply stagnation. Since the covid-19 epidemic, the world economic recovery has been getting slow. From the historical data it can be seen that the last time energy crisis is not only related to the inflation, but also related economic recession, which reminds people that the energy crisis of the 1970s promoted high inflation and induced economic recession. It also makes the global economic outlook more complicated.

The theme of this paper is to explore how energy prices affect economic recovery. It uses the data comparison method to collect relevant price

data and usage data, and compare with the historical data and recent data to find out the impact of energy price increases on people's lives. The significance of the research in this paper is to find a way to solve the problem of energy prices and bring back on trial the good economic environment to the society.

## 2. DATA COMPARISON

### 2.1 Energy Prices

From "Figure 1", in the last few months, the spot price of natural gas in Europe and Asia has continued to refresh historical records, and the price of coal has also soared. The prices of coal and natural gas have reached historical highs [1]. Due to the shortage of other energy materials, the demand for crude oil prices has soared, and oil prices have skyrocketed. All these things that have happened are signs of a crisis. The main impact in the short-term is investment and consumption, which is detrimental to the development of most countries in the long-term.



Figure 1 Trends in energy prices, 2020-2021 [1].

## 2.2 Current Situation

The direct impact of rising energy costs is rising inflation, which drags down consumer spending. If prices remain at this level, rising energy prices will increase the consumer price index in the fourth quarter. The GDP are going to have affected. The global economy in could be stronger in next year, but rising energy costs do raise concerns. Purchasing power may be dragged down sufficiently, which may weaken economic growth.

When the covid-19 epidemic began, the anti-epidemic measures implemented by various countries at that time caused many economic activities around the world to stagnate. This triggered a sharp drop in energy consumption, leading energy companies to cut investment. However, driven by industrial production, natural gas consumption rebounded rapidly, which boosted demand when natural gas supply was relatively weak. In fact, due to labor shortages, backlogs of maintenance projects, extended lead times for new projects, coupled with sluggish investor interest in fossil fuel energy companies, energy supply has slowed down in response to price signals.

Obviously, energy prices cause a seriously inflation. In the Euro area the cost of energy has increased 17.4% [2]. In USA, 24.8% increased energy cost [3]. All these according to Sep 2021 data, it can predicate the energy cost is still goes up in the further coming month.

Both the duration and the scope of global influence are unprecedented. Generally, energy

price changes decided by seasonal and production. However, this time the energy price really affects the worldwide economic market.

According to the data above the consumer and business are feeling with the huge pressure and squeeze, due to the higher gas and coal prices, combined with rising carbon prices, have resulted in higher electricity prices.

## 2.3 Europe Situation

In Europe, electricity prices leaped last week to their highest level on record, the increase was even higher. In Germany, retail electricity prices have already hit a new record to 30.4 cents per kilowatt hour, up 5.7% from a year ago [4].

From "Figure 2", it is clear to see that In the January, the electricity prices around 50 euro. After 9 months, In the October, the price per megawatt-hour touches around the 140 euro, and could go higher in the future. [10]

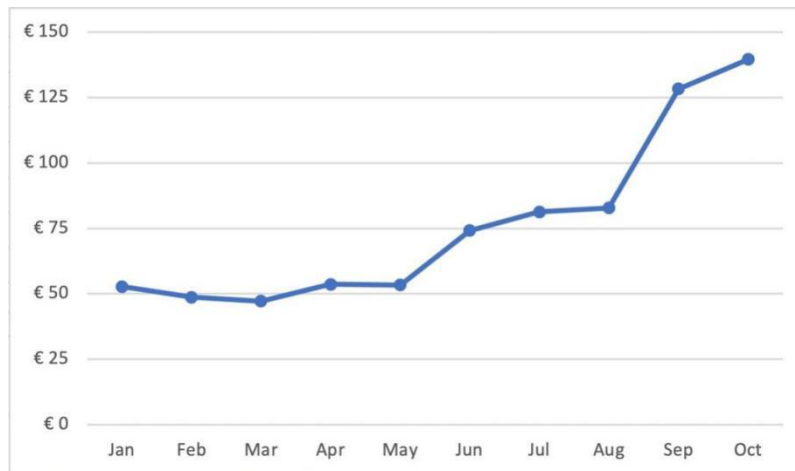


Figure 2 Average monthly electricity wholesale prices in Germany from January 2020 to October 2021 [10].

In Europe, many businesses are likely to face the double impact of rising energy costs and a potential decline of consumer spending due to households' increased energy-related expenses. Rising power prices are already impacting many manufacturing industries. Some factories are no longer run to producing because of the deteriorating margins due to the sharp increase in gas prices.

The price increases are expected to result in sharp upward pressure on household energy bills and present broader risks to economic activity. Wholesale prices for gas and electricity are surging across Europe, raising the prospect of increases in already-high utility bills and further pain for people who have taken a financial hit from the coronavirus pandemic.

Now, price hikes are putting even more households at risk of being disconnected from power and gas grids because they cannot pay their bills. Many are vulnerable because their incomes dropped, and bills rose during the pandemic. People who work in service sector were hit especially hard, and many of them are lost job. The power prices cause a huge effect for the economic recovery, and it will take more time to struggle with the energy cost.

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## 2.4 China Issues

Not only in Europe zone, but China is also meeting the power shortages have slowed down the industrial development of the entire country.

In China, electricity prices have not followed the sharp rise in coal prices. As a result, coal-fired power producers have insufficient coal on hand, and more than 10 provinces in China have alternating power outages. Many manufactories stop their production due the shortage of the power.

At the end of September, State Grid restricted residents' electricity consumption to avoid the collapse of the power grid, which has aroused public debate. The short-term rapid growth of electricity demand is one of the key factors causing the shortage of electricity coal and electricity supply.

Since the beginning of this year, China has gradually recovered the economic from the haze of the epidemic, many oversea orders have flowed into the country, enterprises have expanded their production capacity, and electricity consumption has continued to increase.

In the first half of 2021, China's GDP growth rate reached 12.7% [5], and the industry continued to recover rapidly. During the first half of the year, energy consumption increased by 10.5%. The electricity consumption of the whole society was 3.93 trillion kWh, an increase of 15.8% compared to the same period in 2019 before the epidemic [6].

According to statistics from the China Electricity Council, China's electricity generation from January to August this year accounted for 71.8%, and the rise in electricity demand will bring about the output of coal consumption. According to data from the 2021 Global Coal Economic Operation Bulletin, coal consumption around the world is about 2.1 billion tons, the largest amount. The increase in electricity prices stipulated by

China shall not exceed 10% of the benchmark price [7].

Based on the policy, even though the government permitted exceed 10% of the price to sell electricity but is not enough to cover up the coal prices soaring. As time goes by, the coal power plants fell into a situation where the more power they generated, the more losses they would lose. Coupled with the fluctuation of renewable energy power generation, the power supply problem finally broke out.

## **2.5 Energy Transition**

According to the white paper "*China's Energy Development in the New Era*", it systematically introduced China's main policies and major measures to promote its energy development strategy, and China's overall consumption has accelerated its transformation from energy consumption structure to clean and low-carbon.

In 2019, coal consumption accounted for 57.7% of total energy consumption, a decrease of 10.8% from that in 2012; consumption of clean energy accounted for 23.4% of total energy consumption, an increase of 8.9% from that in 2012. Green development of energy plays an important role in the reduction of carbon emission intensity. In 2019, the carbon emission intensity was 48.1% lower than that in 2005 [8].

In September 2020, China stated in its speech at the Seventy-fifth United Nations General Assembly that China will increase its national independent contribution, adopt more powerful policies and measures, and strive to reach its peak carbon dioxide emissions by 2030, and strive for 2060. Achieving carbon neutrality years ago [9]. This means that China is following a development strategy with carbon reduction as the key strategic direction, promoting synergy in reducing pollution and carbon, and promoting a comprehensive green transformation of economic and social development.

As the world's largest carbon emitter, it has made commitments with climate change conference and made change with climate. Transferring to clean energy and reducing carbon emission will be the first target to promote economic development. Power outages, economic growth and transformation are converging, it will be lowered, and the pace of carbon peaking and carbon neutrality will remain the same.

## **3. COAL IS ANOTHER IMPORTANT ISSUE**

China's power shortage may block achieve the strong economic growth expected by the in the coming months. It depends on how much coal China can mine and burn soon. And has a huge demand for energy, and this demand is increasing, and especially relies on energy-intensive industries to provide impetus for economic growth.

The arrival of the winter heating season requires China to mine and burn more coal. Furthermore, it will face the issue of whether to allow factories to continue to operate at full speed to produce industrial raw materials for the global supply chain.

Continued supply tensions may force China to reshape the economy, the supply chain stuck make the products price indirectly goes up. Many large manufacturers have cut production to avoid losses. Moreover, due to energy shortages, most heavy industries have imposed restrictions on their production, like those of metal smelters, electronic manufacturing, etc. This move may reduce exports and indirectly affect the international market.

Natural gas prices have soared, crude oil inventories have fallen, coal production has been tightened, and fuel supply has been in a hurry. The cold winter is approaching, and many major energy consumption regions in the world are facing energy shortages recently, casting a shadow over economic recovery and energy security. Due to imbalances in supply and demand, energy transition, financial factors, etc., global energy prices will not drop significantly in the short term.

### **3.1 The Effect of Energy Shortage on the Market**

The recent severe cyclical energy shortage in the global energy market is manifested in the lower-than-average levels of natural gas, oil, and coal inventories in major energy consumption areas in the world, and prices have risen sharply [1]. Affected by the supply of natural gas and other energy sources, European electricity prices have soared. According to *The Economist*, since the beginning of September, wholesale electricity prices in Germany and France have risen by 36% and 48%, respectively, and are currently hovering at around 160 Euros per MWh, a record high. In the UK, the price of electricity is as high as £385 per MWh.

Rising energy prices raise the production costs of downstream industries, adversely affecting power supply and winter heating. The imbalance of energy supply and demand, the radical green transition leading to insufficient investment in fossil energy production, the implementation of loose monetary policies by the United States and other economies, and abnormal climate factors have jointly caused global energy prices to rise.

Since the outbreak of the covid-19 epidemic, major economies around the world have implemented large-scale easing policies. In particular, the United States has unscrupulously implemented the "unlimited quantitative easing" monetary policy. The annual inflation rate in the United States soared to 6.2% in October 2021, the highest level since November 1990 and higher than the expected 5.8%, with the largest increase in energy costs (30% vs. 24.8% in September) [12]. The superposition of currency depreciation and the increase in demand brought about by economic stimulus policies has triggered a general surge in commodity prices.

### **3.2 Analysis**

The world is struggling to cope with the uneven economic recovery after the epidemic, and supply disturbances and price pressures have brought unprecedented challenges to countries [11]. In order to accelerate the green transition of energy, major economies in the world have led to insufficient investment in the oil and gas industry, which in turn triggered supply shortages, which is also an important factor influencing potential rises in energy prices. It is expected that global upstream investment in oil and gas will gradually increase. However, affected by the global energy transition, it is still difficult to return to the level before the epidemic. As the upstream investment in oil and gas continues to fluctuate at a low level and the growth rate of production capacity has slowed down significantly, global energy prices are not expected to fall rapidly in the short term.

## **4. EXPANDING INVESTMENT IS ESSENTIAL TO SUSTAINABLE DEVELOPMENT**

Nowadays, all economies are considering investing in clean energy because it not only brings capital, but also creates jobs, transfers technology. The production and use of energy are currently the largest source of greenhouse gas emissions. At

COP26, more than 20 countries signed a global coal-to-clean energy transition statement, promising to accelerate the transition to non-emissions-free coal-fired power generation and stop issuing new permits for new non-emission-free coal-fired power generation projects [13].

By 2030, the country's industrialization and "most" of the world's thermal coal assets will be phased out to achieve the accessibility and scalability of emerging clean energy technologies. With technological innovation, the price of renewable energy has fallen far faster than the industry expected. And they are rapidly becoming cheaper than fossil fuels.

The development of renewable energy sources such as wind and solar energy is expanding around the world, which will help combat climate change. To ensure that they meet the growing energy demand, while saving costs, increasing employment, promoting growth, and achieving climate goals, and achieving economic recovery.

## **5. CONCLUSION**

During the epidemic, economic recovery is difficult and energy supply is unbalanced. The price shock has affected the entire economic market. The economic downturn, inflation and other factors have brought unpredictable possibilities to the future. Affected by the global clean energy transition, clean energy is still in the early stages of development and is not yet sufficient to completely replace fossil fuels such as coal. The economic slowdown or even decline is understandable. As the energy reform will have a profound impact on the energy industry, considering energy consumption and global market share, changes in the energy structure and energy production and consumption patterns brought about by the reform will have a huge impact on the energy industry.

The global economic growth rate has fallen, the recovery has been uneven, and the stagflation characteristics have intensified. We still need to be alert to the risk of external policies exceeding expectations.

Energy prices remain high for a long time, and its impact will evolve more, and factories and households will become less dependent on energy. More intervention depends on the government's approach. If the government can protect consumers from the impact of energy prices, it will solve the immediate economic problems. The government encourages the development of clean energy, which

can completely solve the economic interference caused by high prices in the future.

## AUTHORS' CONTRIBUTIONS

This paper is independently completed by Zheming Hu.

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