

Identifying European Union Countries' Cooperation in Reducing Carbon Emissions

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ABSTRACT

Faced with the severe climate change situation, major economies around the world, such as the European Union (EU), the United States, China, and Japan, have gradually formulated carbon reduction policies to combat climate change. As the world's top economy, the EU has long been actively promoting the global response to climate change and leading the issue of climate change. This article explores the cooperation among EU countries in reducing carbon emissions. This study can provide a comprehensive and in-depth analysis of national cooperation in carbon emission reduction among EU countries, and can help to provide a theoretical basis for future policy recommendations. This article collected 10 articles from Google Scholar and CNKI and summarized them by category. This paper finds that the carbon emission trading system is opposite to a financial instrument system. This system embodies the "polluter pays" principle. As an important measure, it makes full use of market mechanisms and financial means to promote carbon emission reduction.

Keywords: *The European Union, Carbon emissions, Policies and legislations.*

1. INTRODUCTION

The European Union (EU) is an active promoter in the global response to climate change, and it has long begun to take environmental governance as its starting point to solve climate change. Since then, the problem of global climate change has become more and more serious, and international relations are unpredictable. In order to solve the problem of energy dependence, establish technological advantages, lead global economic development, strengthen intra-EU integration and obtain international political benefits, the EU continues to actively promote the internal and international carbon emission reduction process. The EU has set a goal of reducing greenhouse gas emissions by 20% from 1990 by 2020 and limiting the increase in global average temperature to less than 2 degrees Celsius above pre-industrial levels. In order to achieve this goal, greenhouse gas emissions must be reduced by at least 80% from 1990 by 2050. The EU is implementing various policies and measures in the fields of energy efficiency, renewable energy, transportation and agriculture. The main actors involved in these efforts are national governments, as well as local authorities (municipal authorities) and regional authorities (regional governments). The European Union is also a unique international player. It has a centralized decision-making process, but its

member countries have different levels of economic and environmental development, which makes it difficult to agree on common policies for all countries at the same time. This paper mainly studies the main ways of cooperation among EU countries in solving the problem of carbon emissions. Since the climate neutrality target was put forward, the EU's carbon reduction policy mainly relies on financial tools, carbon emission trading system and other ways to implement, and has achieved good results. This suggests that other groups in the international community need to continuously and steadily promote the improvement of carbon emission right trading market and fiscal policy, and use carbon emission trading and fiscal means to lead enterprises to actively participate in carbon emission reduction projects, so as to achieve carbon emission reduction of the whole economy. A lot of research has been done in this area in the last 20 or 30 years. For example, the development process of EU carbon emission reduction policy is summarized. First, the embryonic period (before 1990): the period of exploration and development (1991-2017) with pollution control as the starting point, supplemented by energy structure adjustment. Secondly, from the perspective of energy, carbon trading is extended to all industries to promote energy conservation and emission reduction. Finally, the formative period (2018-present): propose carbon neutrality targets and jointly promote

carbon emission reduction in various fields. However, the disadvantage of these studies is that the specific modes of cooperation between EU countries are not introduced and refined. This article lists three main ways of cooperation by taking "EU cooperation" and "carbon emissions" as keywords, searched articles from 2000 to present on Google Scholar and CNKI, and a total of 10 articles were selected into the analysis scope of this paper. This paper also listed and summarized the arguments of articles and books uploaded on Google academically in relevant fields, analyzing the impact of various methods in combination with the actual situation.

2. THE COOPERATION OF EUROPEAN UNION COUNTRIES IN REDUCING CARBON EMISSIONS

This paper will classify and summarize the literature found from three perspectives, which are multilateral forums, Emissions Trading Scheme and the Regulation of Effort Sharing. The specific presentation of classification and summary can be seen in Table 1.

Table 1. Analysis of 10 papers of cooperation of European Union countries in reducing carbon emissions

| No. of papers | Context of the cooperation of European Union countries | References |
|---------------|--|--------------|
| 3 | Multilateral forums | [1][2][3] |
| 4 | Emissions Trading Scheme | [4][5][6][7] |
| 3 | Effort sharing | [8][9][10] |

2.1. Multilateral Forums

The European Union has been at the forefront of climate action since its inception when it created one of its first climate change initiatives – the Energy Community –which includes all 27 members except for Ireland (which joined later). Today there are more than 40 different actions within this framework including energy efficiency measures like building codes or renewable energy targets for example but also joint research projects like those involving CERN's Large Hadron Collider or wind farms along with support mechanisms like carbon markets where companies can buy credits to offset their emissions. In addition several key international agreements have been signed by both national governments and institutions including Kyoto Protocol (1997), Copenhagen Accord (2009) and Paris Agreement(2016) [1]. The role of multilateral forums in reducing carbon emissions is not only to provide a platform for the EU countries to discuss and agree on a common approach. It is also about providing an equal footing for all countries, irrespective of their size or economic strength. The EU has been active in setting up such platforms since 1992, when it set up the G8 as part of its efforts at global governance [2]. Since then, other

forums have been created by the EU: within this framework, there are now two major international bodies that deal with climate change issues: UNFCCC (the United Nations Framework Convention on Climate Change) and IPCC (the Intergovernmental Panel on Climate Change) [3]. These bodies have different mandates and different roles but they work closely together. In addition to these multilateral forums, there are also bilateral negotiations between individual countries where each country takes responsibility for its own actions towards meeting targets agreed upon under the Kyoto Protocol.

Although the 2015 Paris Agreement is a major victory for EU diplomacy, there are disturbing signs that the world will not be able to achieve its goal of stopping global warming. Considering the degree of economic transformation required to get rid of carbon emissions, the global climate architecture cannot be composed of the Paris Agreement alone. The G20, G7 and bilateral relations will also play an important role. As a multilateral participant, the EU will need to weave the main line of climate ambition between and among these forums to ensure that they are mutually reinforcing. EU member states are also divided on the EU's own carbon emission targets. If multilateral climate diplomacy breaks down in the coming period, the willingness of many countries to cooperate on other issues may also decline. EU member states need to be at the forefront of efforts to reduce climate change and deepen their plans to mitigate their imminent social and political impact.

2.2. Emissions Trading Scheme

The European Union Emissions Trading Scheme (EU ETS) is a carbon market which allows member states to trade allowances for greenhouse gas emissions. The EU has set up the scheme to help countries meet their commitments under the Kyoto Protocol, an international agreement on climate change signed in 1997 by many nations that committed themselves to reducing their greenhouse gas emissions [4].

The Kyoto Protocol was never ratified by all of its signatories, and it expired in 2012. However, some of the commitments made under this treaty remain in place until 2020 and beyond. Under these commitments, most developed countries have agreed to reduce their greenhouse gas emissions by at least 5% below 1990 levels as soon as possible after 2012; developing countries are required to cut their emissions even more drastically than this. For example, Japan has pledged to reduce its emission intensity by 25 per cent from 1990 levels between 2008 and 2013; China has promised cuts of 40-45 per cent from 2005 levels; India intends reductions of 20-25 per cent from 2005 levels over the same period; while Canada aims for a 30-35 per cent reduction from 2005 levels between 2011 and 2015 [5]. These reductions will be achieved through various policy

measures such as energy efficiency improvements or renewable energy targets (such as wind power).

In order for these policies to be effective they need support: financial incentives such as tax breaks or subsidies must be offered where appropriate so that businesses are encouraged into adopting them voluntarily rather than having them forced upon them through regulation or legislation. This is where carbon markets come into play: they allow governments around the world – including those with no national carbon price – an efficient way of providing financial incentives for low-carbon technologies without having to make direct outlays themselves [6]. By allowing companies who produce low-carbon goods or services access to credits based on how much CO₂ they emit when producing them, governments can encourage industries towards greater efficiency without needing massive upfront investments in technology development. In addition there is also evidence that trading schemes can provide additional benefits beyond just economic ones: research suggests that “the creation of a market mechanism may actually increase public support for environmental protection”. It seems likely therefore that if a country's economy benefits significantly from being part of a trading scheme then it would also benefit politically too (as well as financially) [7]. As such we might expect political parties with strong ties within industry groups whose products benefit greatly from participating in trading schemes would have less reason not only vote against but actively campaign.

The government determines which entities in each sector are responsible for their emissions under this trading scheme. Simultaneously, there is a trading market where entities can acquire units to cover their emission liabilities and sell units they no longer require. The transaction price is determined by the market's supply and demand assumptions. Higher goals imply reduced supply, whereas higher emissions imply increased demand; both imply higher emission prices and more behavioral adjustments. Each responsible entity must report its emissions and provide governments with enough units to cover its greenhouse gas emissions. Companies who are forced to abandon the unit will pass on the expenses to their customers. Emission prices are imposed directly on entities that pass over units to the government, either because they have to buy units from other entities or governments, or because they lose the opportunity to sell freely distributed units. When the government sells units through auctions or fixed-price mechanisms, it will earn revenue. When selling fixed-price units that allow the market to emit more, governments must take more actions to reduce domestic emissions (such as reducing the use of fossil fuels or planting more trees) or buy emission reductions from other countries - these actions have costs. When the ETS auction is introduced, the government will receive more

considerable revenue. It has said that any income from agricultural emission pricing will be returned to the sector to help make the transition to low emissions.

2.3. Regulation of Effort Sharing

Next, this paper will try to introduce the role of Effort Sharing Regulation by EU countries in helping to reduce carbon emissions. The purpose of this regulation is to provide a framework for all member states, including the smaller ones, which are not yet able to meet their emission reduction targets. In other words, it allows them some leeway so they can develop more efficient ways of reducing greenhouse gas emissions than they would otherwise be able to do on their own. It also helps them with financing mechanisms so that they can invest in these new technologies and processes that will help them achieve their goals faster than if they were doing it alone without any kind of support from the European Union or from other sources outside Europe's borders. According to the Effort Sharing Regulations, greenhouse gas emission reductions across the EU are shared by all EU member states. This is mainly based on a country's wealth measured in per capita GDP. The richest member countries need to reduce their emissions by 40% from 2005 levels by 2030, and the poorest member countries can maintain stable emissions in 2005 by 2030. Compared with the emission levels in 2005, these countries' targets add up to -30% of the overall ESR target for 2030.

So basically what now this paper is introducing is an effort sharing mechanism whereby each country has a target for how much CO₂ pollution should be reduced by 2020 and then each country decides how much effort it wants to put into achieving this goal over time until 2030 when all countries' targets must be met at least 80 percent below 1990 levels [8]. So there are different types of measures which could be used by every state according to its needs but there are also certain minimum requirements that every state must follow in order for this system not only work but actually work properly . For example , each member state has set up an agency called the Commission for Emissions Trading Scheme (CES) which oversees the whole process [9]. Every year , CES sets national limits on how much pollution per person per unit area can go into effect at various times during those years , usually between January 1st and March 31st whereupon those limits become binding upon all members states who have signed onto this scheme [10]. If a particular state does not want such limits imposed upon itself , then it has two options : either join another group like Germany did last year when she joined up with Sweden, Finland, Italy and Luxembourg or else impose similar restrictions unilaterally through legislation passed by parliament or through executive orders issued by government ministers . These latter two options allow individual governments greater flexibility while still

adhering strictly enough within whatever guidelines given out by CES since both forms of legislation require approval from Brussels before being enacted into law. Greenhouse gas emission reductions across the EU are shared by all EU member states, according to the Effort to Share Regulations. This is based primarily on a country's wealth as measured by GDP per capita. By 2030, the richest member countries must reduce their emissions by 40% from 2005 levels, while the poorest member countries can retain 2005 levels of emissions. These countries' targets add up to -30% of the global ESR target for 2030 as compared to 2005 emission levels.

3. CONCLUSION

The EU has a set of policies to describe the path to carbon neutrality. Considering the EU's own carbon emissions and economic characteristics, its key measures are to constantly innovate new energy technologies, expand the carbon emission trading system, strictly implement carbon emission standards for products in various industries, develop carbon sink projects, and fully implement energy taxes. State leaders will comprehensively promote carbon emission reduction in all sectors, with a focus on reducing carbon emissions in energy, construction, transport and other sectors, and jointly promote the EU to achieve carbon neutrality through innovative negative emission technologies, the use of fiscal policies, the development of green finance, and the increase of carbon sinks. The main way to realize the above policy measures is still through carbon trading, fiscal subsidies, environmental taxes and other ways. Cooperation between EU member states is reflected in several projects:

The first is the Emissions Trading Scheme (ETS), which was launched in 2005 and came into force in January 2007. This is an auction-based system. Its "currency" is a government-issued unit of emissions. Each unit is like a certificate that entitles the holder to emit a tonne of greenhouse gases. Companies are required to buy emissions permits from the government at a fixed price.

Second, multilateral forums. Its mechanism is mainly to promote enterprises and other micro-economic entities to take carbon emission reduction measures, so as to gradually decarbonize various sectors and promote the carbon emission reduction of the EU as a whole. Effective European participation in multilateral forms will require enhanced cooperation between EU entities. This includes coordination between EU institutions and member state capitals in Brussels, as well as on-site coordination between EU delegations and national embassies in third countries, to ensure that climate diplomacy is a core part of promoting national and European interests abroad.

Then there's the ESR. Emissions trading should not be extended to industries outside the current EU Emissions Trading System (ETS). While carbon pricing is essential to ensure the polluter pays principle, it is insufficient to address key non-market barriers to large-scale deployment of clean energy solutions in the transport and construction sectors. Finally, adjust allocated emission quotas to reflect actual conditions: the forthcoming revision needs to improve the integrity of the EU climate policy framework and emission reduction trajectory to ensure that the starting point of the EU ETS and efforts to share regulations reflect the complete elimination of true emission levels and vulnerability carbon accounting.

The focus of the future research can be put on the sustainable development of carbon emission trading system under its inspiration to help carbon emission reduction.

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