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Design (Allocation) of a Carbon Emission System—A Lesson from Power Restrictions in Zhejiang, China

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Abstract: This paper discusses how to design (allocate) a city-level carbon emission system, considering the recent outbreak (end of 2020) of electricity consumption restrictions in a few cities in Zhejiang, China. Although these measures aimed to achieve environmental goals, they had a certain negative impact on residents' lives and foreign trade production. This paper argues that local authorities should be more flexible in formulating performance targets, incorporate interactive feedback in performance management, and utilize assessment results and better government internal control. This paper proposes a (national) strategic plan to achieve carbon control through the implementation of a circular economy, such as the design of a carbon emission system considering the economic development (supporting industry) in each city and a city-level carbon trading market.

Keywords: circular economy; carbon control; government performance management

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1. Introduction

At the end of 2020, the local authorities of Yiwu, Wenzhou and other cities in Zhejiang, China, issued power restriction orders, which affected the normal residential electricity consumption as well as the timely delivery of foreign trade orders by local factories, causing them to suffer credit and economic losses [1]. This paper follows the case study approach to discuss new measures for local authorities to balance the conflict between environmental protection and economic development, particularly how to strengthen the government's performance management ability to achieve the strategy goal of carbon reduction. One possible approach is to utilize the circular economy strategy to construct a carbon emission system considering the economic development status of each city.

In the circular economy, the previous literature has discussed its development models [2], implementation paths [3–9] and performance evaluation [10–13]. The circular economy aims to improve energy consumption efficiency and ultimately environmental protection on the basis of economic development. However, there is limited literature looking at how to apply a circular economy in addressing the carbon emission needs between cities in the same region. One lesson we learn from the power restriction case in Zhejiang, China, is a lack of an appropriate evaluation system for local authorities to determine the appropriate enterprises' electricity consumption, as well as how to evaluate local authorities' effort in managing carbon emissions.

This study proposes the following research question: how can the regional circular economy approach be applied to the design (allocation) of a carbon emission system to achieve a balance between environmental protection and economic development? This paper first reviews the literature related to the circular economy, including its definition and development process, as well as how its applications in government performance management and carbon emission reduction research. This is followed by a feasibility analysis of how to achieve carbon emission reduction through a circular economy approach,

from the theoretical perspective. This study then adopts the case study analysis approach to analyse the power restriction case in Zhejiang, China, focusing on the problems of provincial- and city-level governments. Based on the theoretical discussion of the circular economy and the room for improvement in the government's work, this study proposes suggestions for building a city-level carbon emission allocation system (based on adequate indicators) and measures for improving the government performance management system.

This study makes both theoretical and practical contributions. Theoretically, this study extends research on the application of the circular economy to the field of carbon reduction. By discussing the power restriction orders in Zhejiang China, this study, based on the (regional) circular economy, proposes a few suggestions. Practically, these suggestions can be seen as the main contribution of this study. The rest of this paper is organised as follows. The second section reviews the related literature on the circular economy and government performance management, in particular its internal consistency. The third section discusses how to adopt the circular economy approach to achieve carbon reduction. In the fourth section, this study describes the power restriction case in Zhejiang Province. From the perspective of circular economy theory, taking performance management as the starting point, this study analyses the relevant decision-making process of the government, and identifies the possible deficiencies in it. In the fifth section, this study suggests recommendations for government officials and business managers to better apply the circular economy approach for carbon reduction.

2. Literature Review

2.1. Circular Economy

In 1966, Boulding proposed the concept of "spaceship Earth", stating that throughput should be minimised in the spaceman economy. This concept is considered one of the first initiators of circular economy thinking [14]. In 1989, the concept of the circular economy, which is different from the environmental protection economy (recycling), was first proposed by British economist Pearce [15]. Then, from 1992 to 2010, various new models of the circular economy theory were gradually developed, such as the cradle-to-cradle economy proposed by researchers using the principles of green engineering [16], the business model for the functional service economy proposed by Stahel in 2008—the performance economy [17], product design approaches that fit in the requirements of sustainable development while considering the environmental aspect of industrial ecology [18], bionics that uses imitation or ways that adapt to nature for innovation [19], and a product life cycle (LCA) evaluation model that comprehensively considers industrial efficiency, environmental justification, and corporate ethics [20]. In 2010, the Brazilian government launched the Low-Carbon Agriculture (LCA) strategy as a national project to promote the best agricultural management practices. Sá et al. argue that LCA activities have overlapping and synergistic effects, which enhance environmental quality, improve agricultural productivity and reduce global climate change. For example, the "corp-livestock-forestry integrated system (ICLFS)", as one of the agricultural best management practices, shows one potential application of circular economy in carbon reduction [21].

Previous studies have identified the influencing factors of the circular economy, such as government regulation in different legislative environments, which may both promote the circular economy and hinder it [22]. Further research covers examples of implementing circular economy business models in a forest-based bioeconomy [3], applying the circular economy to predict the future direction of corporate transformation and innovation [4], and promoting the circular economy to design social cooperation to achieve sustainable development in terms of the three aspects of the economy, society and the environment [5]. We also observe the government's effort in promoting a circular economy. For example, in the EU region, the government policy design approach enhances the consistency and coordination between policies [6] and utilizes advanced Industry 4.0 technology to promote a new round of innovation in the circular economy [7]. Recent cooperation between academia and enterprises has also promoted the development of the circular economy down

to the enterprise level. For example, from the perspective of designing and developing products, scholars have introduced a business model of sustainable product utilization, thereby reducing the consumption of materials and energy [8]. Researchers have studied 5 new business models for enterprises to achieve circular growth through the deployment of sustainable resources and the sharing economy [9]. The Ellen-McArthur Foundation (EMF) (established in 2010, the EMF was the first organization in the world to research and disseminate the circular economy and conduct circular economy policy consultation) of the United Kingdom and McKinsey cooperated to publish several circular economy reports and held the Top 100 Circular Economy Enterprises event to promote circular economy development. In one way, recent studies confirm the benefit of a circular economy in reducing carbon emissions [23]. For example, Japan and South Korea adopt a circular economy approach to distribute, reuse, and reduce the waste of resources and products [24]; an empirical study of the European Union countries shows that the circular economy is one of the approaches to reducing air pollution, in addition to the use of renewable energy, education, and adequate policy [25].

The circular economy refers to the "general term for the reduction, reuse and resource utilization activities carried out in the process of production, circulation and consumption" [26]. The core of the circular economy is the conservation and efficient utilization of resources, which can act simultaneously in the three stages of resource input, production and waste discharge instead of pure waste recycling. The ultimate goal of the circular economy is to achieve harmony between economic development and environmental protection. Circular economy research in China shows that the eastern coastal area is the region with the highest level of circular economy development [27]. The level of circular economy development in China is highly correlated with the level of economic development, and the policy of reform and opening up, government supervision and industrial agglomeration have all had a significant positive impact on the efficiency of the circular economy in China [28]. However, some studies have found that the "Circular Economy Promotion Law of the People's Republic of China" has not achieved its goal of promoting the transformation of economic development models [29], which means that the circular economy is highly valued in terms of awareness but has a limited effect in terms of action.

The regional circular economy is a subset of the circular economy, which means applying the principles of the circular economy to one region. For example, the construction of the circular economy focuses on creating intelligent and sustainable energy and resource systems and other infrastructure systems and then introducing sustainable employment and social service mechanisms, product recycling and environmental protection systems [30]. In terms of regional circular economy application, the literature focuses on designing a regional circular economy performance evaluation index system. For example, de Ferreira designed an evaluation system to structurally reflect the circular economy development process in Porto, Portugal [31]. In addition to the urban regional circular economy, the rural and agricultural regional circular economy is an important field of theory and application. Taking Heilongjiang Province, an important agricultural area in China, as an example, Meng proposed a clustering model for the regional division of the agricultural circular economy, designed a circular economy development model suitable for the development of natural resources and labour production, and divided Heilongjiang into a farming-dominated region (based on grain crops) and multiple animal husbandry-related farming-dominated regions (based on rice; vegetables and edible fungi, melons and fruits; and forestry) [32]. In an example of research on the circular economy, Xue et al. [33] applied the life cycle assessment approach and took biogas as a major concern to investigate large-scale pig farming in Liaoning, China. The analysis results revealed that the circular economy has brought many benefits that are conducive to realizing sustainable development, such as narrowing the wage gap between urban and rural areas, increasing employment, reducing carbon emissions, slowing the greenhouse effect, and reducing threats to public health. Moreover, if a carbon trading market is established, it will generate economic benefits of 193 million yuan [33]. Research shows that adding further mechanisms to the circular

economy, such as carbon trading, will create greater economic benefits, which makes it reasonable to consider the combination of the low-carbon economy and the circular economy in future economic development.

A review of previous literature shows that the theory of circular economy can be applied to different subjects, not only to the global economic system [34] but also to a country, a region, or even an enterprise or family. When we implement a circular economy on a national or regional scale, we cannot do so without the strong support of governments, especially in economically underdeveloped countries. Therefore, the role of the government in the circular economy is critical. The key tool to coordinate and drive government behavior—government performance management—needs ongoing adjustment and improvements when adapting it to the development requirements of a circular economy. The literature on government performance management is diverse. It includes, for example, the design of indicators to evaluate the performance of the circular economy and propose policy suggestions for the government on how to help enterprises develop the circular economy [35–37]. It designs models to evaluate the implementation effect of governments' public policies for the circular economy [38], and it studies how government policy affects enterprises' behaviour in the circular economy [39]. There is little research on how to apply government performance management to promote the development of a circular economy.

2.2. Government Performance Management

With the aggravation of global climate change and the increasing importance of low carbon and energy conservation [21,40], it is increasingly necessary to consider the elements of the circular economy in government performance management for the government to better play a positive role in sustainable development.

Performance management was originally a management-by-objective method for enterprises. With experiments in task-related studies, Kopelman finds that task feedback can improve participants' work behavior or performance [41]. Objectively, performance feedback allows participants to observe their behavior and the associated consequences; subjectively, it allows participants to express their work-related feelings and educate them on the meaning of work and their missions to encourage them to work hard [42]. Acknowledging the association between performance feedback and work performance [43], high-standard on-time feedback improves workers' work performance [44]. Following the above literature, we argue that it is important to set up an appraisal system to provide evaluation and performance feedback for local authorities.

The United States first applied it to the performance management of public organizations in the 1960s. Later, the new public management movement with the "3E" (economy, efficiency and effectiveness) goal was launched in Western countries, led by the United Kingdom and the United States, and they applied performance management to the field of public management. The concept of government performance management was born and gradually became part of the national system (for example, the "Local Government Act" passed by the British Parliament in 1999 clarified the method of government performance management; the "Government Performance and Results Act" (GPRA) of 1993 was the original legal basis for government performance management in the United States). China began to introduce the theory of government performance management in the 1990s and gradually implemented it in practice. The Chinese argue that future government performance management should improve the development achievement evaluation system, highlight the implementation of responsibilities, and ensure the consistency of power and responsibilities [45].

In China, the central government is responsible for formulating national strategic goals, which are assigned from top to bottom to provincial-level and city-level governments to implement the associated central strategic plans. For example, as early as 2005, the central government of China decided to use specific sulphur dioxide (SO_2) emission reduction targets as the main performance evaluation criteria for local authorities to encourage

them to pay attention to environmental protection. Subsequently, SO_2 emissions were significantly reduced, but the local GDP growth rate also decreased significantly [46]. In 2006, China formulated the policy of energy conservation and emission reduction and further included energy consumption per unit of GDP in the performance evaluation criteria of local officials, which significantly improved the data accuracy for local government performance assessments and reduced data manipulation and fraud by local officials [47]. The Chinese government's inclusion of total pollutant emissions and energy consumption per unit of GDP in the official evaluation system has worked well, but the underlying distribution mechanism of the pollutant emission quota has not fully exploited the "scale effect" in pollutant emission and energy consumption reduction. Zhang and Wu found that during the process by which the Chinese central government assigned environmental targets to different provinces, provinces with high historical pollutant emissions and energy intensity were not assigned higher performance targets, while provinces with higher political rankings (political rankings are measured by the number of Politburo members who have served as party secretaries or governors in the surveyed provinces) tended to be assigned higher targets because they need to serve as "leading role models" for officials in such provinces to obtain promotion opportunities. The regions with lower historical pollutant emissions and energy-saving performance levels are assigned higher allocation targets because of their estimated greater potential for energy savings and emission reduction in the future [48]. In 2020, the Chinese government proposed the goal of carbon peaking by 2030 and carbon neutrality by 2060. Since then, some scholars have begun to consider low-carbon development indicators in the government's energy-saving supervision performance. For example, Jia et al. [49] designed a government supervision performance evaluation index weighted based on regional characteristics for the low-carbon and energy-saving management of new residential projects to reveal the key issues and key areas of the government's implementation of low-carbon and energy-saving policies.

While the Chinese government attaches great importance to sustainable development, the government performance management of sustainable development is still in the early stage of development. For example, local authorities report "passive management" performance information, as such performance information is mostly used for supervision and reward or punishment, instead of management decision-making [50]. The performance target setting lacks flexibility and, as a result, is prone to data fraud [47]. Additionally, the public has few channels and low participation in the government's sustainable development goals.

The circular economy is an important means of sustainable development. In terms of the circular economy, the performance management of the Chinese government has not yet clearly included specific performance assessment indicators related to the circular economy, and few studies have focused on the implementation of the circular economy with government performance management. The current literature concentrates on the performance evaluation framework of the regional circular economy. For example, Li et al. [10] designed evaluation indicators for the ecological circular economy in Rizhao, a city in Shandong, China, identifying the negative factors deterring the sustainable development ability of the urban ecological circular economy, which are the large consumption of nonrenewable energy and the lack of coordination among the three subsystems of resources, environment and economy. Ye et al. [11] combined the circular economy with low-carbon requirements, establishing a scientific evaluation index system for the development of a regional low-carbon circular economy, and taking Sichuan Province as a case, they provided policy suggestions, such as improving the energy consumption policy system, strengthening supervision, and promoting recycling-related technologies. From an industry reform perspective, they recommend promoting the development of high-tech industries; accelerating the integration of high-tech industries such as artificial intelligence, blockchain, the Internet of Things, cloud computing, big data and traditional industries; and improving the informatization capacity of traditional industries. At present, research on performance evaluation indicators of the circular economy is gradually being refined from the macro

and meso levels [12] to the micro level [13]. In general, however, economic indicators are the main indicators, with less consideration for environmental and social sustainability. With the aggravation of global climate change and the increasing importance of low carbon and energy conservation, it is increasingly necessary to consider the elements of the circular economy in government performance management for the government to better play a positive role in sustainable development.

2.3. The Approach to Allocation Carbon Emission Quota

Efficient government performance management requires the scientific design of how to allocate the carbon emission quota. For example, the adoption of a circular economy approach ensures that scientific and reasonable carbon emission reduction performance evaluation goals are allocated to each region. Recent research mainly focuses on how to allocate carbon emission quotas between states (provinces) and industries, missing city-level discussion. In the design of a carbon emission quota allocation model, fairness and efficiency are the most basic considerations; new perspectives such as regional conflict coordination and emission reduction costs have been added recently. From the perspective of fairness and efficiency, Jiang et al. proposes allocating the carbon emission quota of each province considering a combination of the population, GDP share, marginal emission reduction cost, historical carbon emissions and other factors of each province [51]. Feng et al. designed a multistage model to allocate the carbon emission quota. In the first stage, the urbanization level, per capita GDP, per capita cumulative carbon emissions and emission reduction potential of each province are reviewed to divide the provinces into four regions and then allocate the total carbon emission quota to these four regions. In the second stage, the regional carbon emission quota is further allocated to particular provinces based on their historical carbon emissions, population, GDP and other factors, taking fairness and efficiency into consideration [52]. Dong et al. use the comparative approach, taking population, capital, energy consumption, and historical carbon emissions as input constraints and per capita GDP as output, and then distribute the carbon emission quota based on the principles of historical equality, the principle of population equality, and the principle of equal ability to pay. They found that the distribution result of the principle of equal ability to pay has the highest input—output ratio, which best reflects the principles of fairness and efficiency [53].

Giving consideration to fairness and efficiency, Li et al. established a provincial-level carbon emission quota distribution model that coordinates the conflicts in the quota distribution process. In the first stage, the multidimensional model incorporates four principles of fairness, efficiency, sustainability and government macrocontrol (see Table 1 for specific factors) to confirm the carbon emission plan. The second stage constructs a circular step of "predistribution scheme → directional diagnosis → degree diagnosis → reverse adjustment → harmonious distribution scheme", which is used to continuously diagnose and adjust the predistribution scheme. In the allocation of carbon emission rights, further consideration is given to regional negotiations and consultations [54]. Given the consideration of efficiency, An et al. take the goal of "minimizing the per unit emission reduction cost" to allocate carbon emission quotas between provinces. This is used to reduce the cost associated with carbon reduction in each province to improve their enthusiasm for accepting the carbon reduction quota allocation plan [55].

Table 1. A Summary of Carbon Emission Quota Allocation Factors.

Distribution Level	Factors	Principles
Allocation of carbon emission quotas	Population Size [51–53]	Fairness
	GDP [51,52]	Fairness
	Per capita GDP [51,52]	Fairness
	Historically accumulated carbon emission volume [51–53]	Fairness
	Carbon reduction marginal cost [51]	Fairness
	Carbon intensity [51]	Fairness
	Urbanization level [52]	Fairness
	Per capita accumulated carbon emission volume [52]	Fairness
	Carbon reduction potential [52]	Fairness
	Capital stock [53]	Fairness
	Energy consumption level [53]	Fairness
	Geographical area [53]	Fairness
	Energy intensity [54]	Fairness
	Forest area proportion [54]	Sustainability
	GDP growth rate [54]	Sustainability
	Population growth rate [54]	Sustainability
	The importance of regional development [54]	Governmental macrocontrol
	The protection of vulnerable group [54]	Governmental macrocontrol
	Carbon reduction cost [55]	Governmental macrocontrol
Region	Per capital GDP [56]	Fairness
	Energy intensity [56]	Fairness
	Carbon intensity [56]	Fairness
Industry	Carbon reduction marginal cost [57]	Fairness
	Carbon reduction liability—accumulated carbon reduction volume [57]	Fairness
	Carbon reduction potential—carbon intensity [57]	Fairness
	Carbon reduction ability—GDP [57]	Fairness

Looking at the regional level that is higher than the provincial level, Bian et al. divide the regions with distinct differences in their development mode, economic growth rate, emission targets, scientific and technological progress and their low-carbon emission reduction strategies based on the factors of regional per capita GDP, energy intensity, carbon intensity and other factors. For example, in terms of energy conversion, developed regions should give priority to the adoption of non-fossil energy (especially nuclear power), replace coal-fired power plants, make large-scale use of innovative energy technologies, and accelerate the process of energy substitution in industrial, construction, transportation and other fields. In contrast, the less developed regions in the central and western regions should take various measures to encourage the optimization of the energy structure. In contrast, considering that the burden of energy decarbonization in high-carbon areas is weak, the effective use of renewable energy is a better measure [56]. At the industry level, Zhou et al. assigned industrial carbon emission rights to 37 subindustries in China

by comprehensively considering the marginal carbon emission reduction cost, carbon emission reduction responsibility, carbon emission reduction potential and carbon emission reduction capacity [57].

Table 1 summarizes the criteria of carbon emission distribution as identified in previous literature. According to Table 1, there is no significant difference between regions, provinces and industries. In previous literature, most scholars attach the highest importance to the principle of fairness, which is represented as the most common factor of population size, GDP, per capita GDP, historical cumulative carbon emissions, the marginal cost of emission reduction, energy intensity and carbon intensity. On the other hand, urbanization level, capital stock, geographical area and other factors serve as supplemental factors supporting the allocation decision. The principle of efficiency mainly reflects whether output such as carbon intensity reaches the optimal level based on the allocated carbon emission indicators. Few factors reflect the principles of sustainability and government macrocontrol. For example, the proportion of forest area, GDP growth rate and population growth rate, the importance of regional development, the protection of vulnerable groups, and emission reduction costs. Carbon emission reduction based on the circular economy focuses on achieving sustainable carbon emission reduction through coordination and cooperation within regional divisions. Each region will have its own development positioning. In addition, industrial and regional factors can also be included in making distribution decisions, as can other new factors.

3. Carbon Reduction via the Circular Economy Approach

3.1. Internal Consistency

Building a circular economy requires new ways of doing things and a new mindset that is different from the linear thinking of the continuous growth economy, in the four aspects of economy activity, production, consumption, circulation and distribution of goods and services. From a vertical perspective, the construction of a circular economy means that supply-side structural reform will continue to deepen, and in the future, more innovation will be needed to achieve high-quality development to upgrade domestic consumption. From a geographical perspective, taking China as an example, the construction of a circular economy requires better domestic and regional economic coordination, moving towards a large-scale circular development pattern in which the central and western regions are dominated by production and manufacturing, and the eastern region is dominated by research and development (R&D) and consumption. Urban agglomerations will continue to promote the optimal allocation of resources, improve the utilization efficiency of resources, and form a high-quality and efficient regional circular economy by rationally planning the urban division of labour, scientifically distributing basic urban resources, reducing the barriers to the circulation of elements, and reducing regional transaction costs. Existing research has verified the carbon emission reduction effect of the circular economy in many fields. For example, in the field of agriculture, the development of a circular economy can significantly reduce carbon emissions in the production process [33]; in the construction industry, taking the Yangtze River Delta in China as an example, the application of a circular economy can significantly promote the carbon emission reduction of construction waste treatment [58]. After integrating the concept of the circular economy into the plastic recycling industry (CPRI), the contribution of the CPRI to carbon emission reduction increased from 7.67 million tons in 2007 to 14.57 million tons in 2016 [59], with an annual compound growth rate of 7.39%. Taking Guiyang, China, as an example, the practice of a circular economy in cities can also bring significant resource conservation and carbon emission reduction [60]. Therefore, the construction of a circular economy can promote carbon emission reduction from the aspects of improving resource allocation and use efficiency, promoting low-carbon environmental protection technology innovation, promoting renewable energy, and changing the concept of green and low-carbon.

3.2. Chinese Carbon Reduction Needs

China has strong carbon reduction needs, as the country needs to achieve "carbon peaking", i.e., the Chinese commitment that before 2030, China's carbon dioxide emissions will no longer increase and will gradually decrease after reaching the peak; and "carbon neutrality", i.e., China is committed to offsetting all carbon dioxide emissions from companies, groups or individuals by 2060 by planting trees, saving energy, reducing emissions and using other methods to achieve "zero emissions" of carbon dioxide. Table 2 shows that, among the world's major economies, China has the shortest planned time from carbon peaking to carbon neutrality, and it has the most difficult task. It is foreseeable that in the future, actions to achieve carbon peaking and carbon neutrality will be carried out quickly and efficiently from three dimensions: the government, enterprises and individuals. For example, the government is responsible for providing regulations to establish a national policy for carbon emissions for evaluating the performance of local authorities in regard to carbon reduction.

Table 2. Timelines for the carbon peaking and carbon neutrality of the major economies.

Country or Region	Carbon Peaking Year	Peak Carbon Emissions	Carbon Emissions per Capita	Carbon Neutrality Year
U.K.	1991	742.68 Mt	12.93 tons	2050
EU	2006	3.94 Gt	9.01 tons	2050 (different for every country)
U.S.	2007	6.37 Gt	21.14 tons	2050
Canada	2007	1.01 Gt	30.84 tons	2050
Brazil	2017	1.48 Gt	7.10 tons	2050
Japan	2013	1.30 Gt	10.19 tons	2050
South Korea	2018	669.70 Mt	12.98 tons	2050
China	2030	13.425 Gt (estimated)	9.26 tons	2060
Note: 1 Gt = 1000 Mt				

Source: OECD, WRI, National Center for Climate Change Strategy Research and International Cooperation, Tsinghua University, 2020. In particular, the peak carbon emission data is from Fang et al. [61], the data of Chinese population in 2030 is from the government source (http://www.gov.cn/zhengce/content/2017-01/25/content_5163309.htm, accessed on 1 May 2022) [62], and data of other countries is from "climatewatchdata" (https://www.climatewatchdata.org/, accessed on 1 May 2022) [63].

Despite the pressure of reducing carbon emissions, the Chinese government states that reducing total energy consumption and controlling consumption intensity cannot be achieved at the expense of people's livelihood and electricity consumption. Therefore, it seems more appropriate to improve the efficiency of energy allocation. In 2020, The State Council Information Office of China released a white paper titled "China's Energy Development in the New Era", which discusses the optimization of the industrial structure and the development of renewable energy power generation. In addition, the white paper mentioned that it is necessary to speed up the construction of a national energy-use rights trading market, using the market mechanism to reasonably allocate energy-use rights on the premise of not increasing the total energy consumption of society as a whole and forcing enterprises or provinces and cities to improve their energy utilization efficiency [64].

In 2021, China established a country-wide carbon trading market [65]. Practically, when an enterprise's carbon emission exceeds the carbon emission quota, then such an enterprise can purchase the carbon emission quota from the carbon trading market; otherwise, the enterprise could suffer punishment from the authorities due to an unmet carbon emission target. On the other hand, the establishment of a carbon emission trading target act as an economic incentive to motivate enterprises to reduce their carbon emissions and trade their carbon emission quotas [66]. Therefore, carbon trading motivates enterprises to conduct green technology innovation, promote, industrial transformation, and eliminate high-pollution enterprises [67,68]. Previous literature conducts an empirical study to show that the carbon trading scheme in China can significantly reduce the carbon emissions

of Chinese industrial sectors [69]. At the same time, we observe that the Chinese carbon trading market is not very active and has low volatility [70]. Considering the market size of state-owned enterprises, they play a significant role in carbon reduction, which means that state-owned enterprises are more concerned about carbon emissions from the prospective compliance obligations and punishment measures prospective, rather than economic incentives from actively participating in market transactions [71]. Based on these associated studies, establishing a carbon trading market should start with clarification of carbon emission distribution among cities and enterprises, followed by clear transaction mechanisms and economic incentives for enterprises to participate.

To achieve the goal of carbon reduction, it is not the strategic mission of only the country as a whole but also needs to be decomposed into each province and city. As a result, it is necessary to promote implementation with provincial-level administrative forces in line with actual local conditions based on the different levels of economic development as well as the geographical conditions and pillar industries of each province and city, and it is also necessary to strengthen the coordinated development capabilities of various regions. Therefore, it is necessary to adhere to the system concept and handle the relationship between development and emission reduction, between the overall and the local, and between the short term and the medium to long term.

3.3. Implementation of Carbon Reduction via the Circular Economy (Domestic Cycle)

Construction of the circular economy focuses on the four processes of production, circulation, distribution and consumption to achieve carbon reduction. In the production stage, innovation is used to drive industrial upgrading and master more core technologies. To rely on technological innovation to improve energy efficiency and increase the use of clean energy and new technology to achieve carbon reduction. Therefore, R&D investment and regional and industry collaboration need to be strengthened. In the circulation stage, reducing logistics costs, increasing transportation speed, and improving transportation networks are the basic guarantees for the smooth operation of the large domestic cycle. At the same time, according to the Chinese Carbon Emission Accounts and Datasets (CEADs), the transportation industry is the fourth largest carbon-emitting industry in China, and its carbon emissions accounted for 7.5% in 2019 (https://www.ceads.net/, (accessed on 1 May 2022)). At present, in China's transportation system, the proportion of road transportation is mostly the largest, the overall cost is high, and the consumption of fossil fuels is large. Therefore, transformation of the transportation system is urgently needed. Increasing the proportion of railway transportation and developing renewable energy vehicles can not only reduce transportation costs but also save energy and protect the environment. Thus, they are a common realization path for both building a large domestic circular economy and achieving the goals of carbon reduction.

From the perspective of regional circulation, the development of regional integration is the first path for domestic circulation. Taking China as an example, the Yangtze River Delta, the Beijing-Tianjin-Hebei region, and the Guangdong-Hong Kong-Macao Greater Bay Area will first achieve high-quality regional integration, accumulate experience for smooth domestic circulation, lay a solid foundation for the development of domestic circulation, and take advantage of the possible spatial spillover effects of high-quality regional integration [72] to promote the development of surrounding cities and further open up channels between regions. At the same time, during his inspection in Jiangsu, President Xi Jinping pointed out that "To make the Yangtze River Economic Belt the main battlefield for Chinese ecological priority green development, the main force of domestic and international dual circulation, and the leader in high-quality economic development" [72]. Regional integration not only is the realization path of building a domestic circular economy but can also make outstanding contributions to green and low-carbon development.

Therefore, in the process of constructing a domestic circular economy, the Yangtze River Delta, the Beijing-Tianjin-Hebei region, and the Guangdong-Hong Kong-Macao

Greater Bay Area can play an exemplary role in both economic development and green development and lead other regions to identify their own positioning based on their own resource endowments and environmental characteristics, integrate into the domestic cycle, and complete the mission of carbon reduction.

The circular economy realizes the recycling of resources and improves the economic efficiency of resources or the regeneration of resources. Additionally, the goal is to realize the sustainable utilization of resources and the sustainable development of society. Energy consumption is the source of carbon emissions. Therefore, the development of the circular economy requires the improvement of energy utilization efficiency from the source, achieving the goal of carbon reduction. Taking industrial parks as an example, the transformation of material flows from "resources-products-waste" to the circular thinking of "resources-products-resources". Building a resource recycling system is an important support for implementing the circular economy. At the same time, by improving the technical level and strengthening energy budget management, the comprehensive utilization efficiency of resources and recycling capacity of waste will be improved, reducing the carbon emissions of the entire social system in an orderly and collaborative manner.

4. Power Restriction Event in Zhejiang Province

4.1. Introduction of the Event

The power restriction event in Zhejiang occurred in 2020, the last year of the five-year assessment plan of the Chinese government's energy conservation and emission reduction, which fully exposed the problems and conflicts between environmental protection and economic development arising from the achievement of energy consumption control and the carbon reduction plan. This shows that the circular economy of achieving economic development and environmental protection has not been truly implemented and substantially developed. This study takes the power restriction event as a case to analyse the underlying reason of power restriction in the hope of providing experience and suggestions for the future use of a circular economy to promote carbon emission reduction.

In early December 2020, many cities in Zhejiang Province issued power restriction orders [1]. For example, on December 14, enterprises in Yiwu, Jinhua, Zhejiang Province, had to shut down production lines following the power restriction order. An enterprise in an industrial park in Wenzhou, Zhejiang Province, was also required to have a power outage for 6 days. Pingyang County, Wenzhou city, also notified enterprises that it would implement orderly electricity consumption for enterprises with high energy consumption and low output value, and it conducted 24-h monitoring of the production electricity consumption of enterprises. Those that did not start production as required were forced to cut off production for 20 days; Dongyang, Jinhua also required nearly 2000 industrial enterprises to suspend production and stagger production peaks from December 13 to 31. In addition to corporate power cuts, the governments of Yiwu, Dongyang, Yongkang, which are three counties under Jinhua city, and other places issued power cuts for citizens, enterprises and institutions, including a reduction in the use of electric lights, air conditioners, water heaters and other electrical appliances. For example, some urban areas in Yiwu turned off street lights at night and closed the elevators in office buildings. In the cold winter, power cuts restricted the use of heating equipment such as air conditioners, and street lights were turned off, which brought a certain degree of inconvenience to residents' lives. At the same time, as the end of the year coincided with Christmas in Western countries, foreign trade orders surged, and many factories expected to start to intensively compensate for the losses caused by the shutdown due to the pandemic in the first half of the year. The sudden power cut forced enterprises to extend their delivery time, resulting in lost customers and damage to reputation and profits. Some companies considered providing their own fuel motor power supply, but the cost was high, and doing so was not environmentally friendly or energy saving.

The power restriction orders in many places in Zhejiang aroused heated discussions and concerns about Zhejiang's ability to stabilize the energy supply being insufficient.

However, the response of the National Development and Reform Commission was that Zhejiang Province had sufficient energy reserves and a stable power supply. Zhejiang's power supply could guarantee the power demand of the whole province. The power restriction order in Zhejiang was mainly caused by local governments fulfilling the performance requirements of energy conservation and emission reduction [1].

In 2017, the Zhejiang provincial government promulgated the "Zhejiang Province '13th Five-Year Plan' for Energy Conservation and Emission Reduction Comprehensive Work Plan" [73]. In 2018, Zhejiang Province issued another document, the "Zhejiang Province Further Strengthens Energy "Dual Control" to Promote High-quality Development Implementation Plan (2018–2020)" [74], which clarified the assessment targets of "carbon reduction" and "coal reduction" for energy in the province and cities, as well as the corresponding assessments, rewards and punishments. The specific assessment methods are shown in Table 3.

Table 3. Zhejiang Province's energy "carbon control" assessment plan.

Categories of Indicators	Weights of Indicators		
Total energy consumption and intensity "dual control" target indicators (40 points)	Annual energy consumption intensity reduction indicator (10 points; a negative indicator)		
	"Thirteenth Five-Year Plan" energy consumption intensity reduction progress indicator (15 points)		
	Annual total energy consumption control index (5 points)		
	"Thirteenth Five-Year Plan" total energy consumption control progress indicators (10 points)		
Energy-saving measure implementation indicators (60 points)	A combination of qualitative and quantitative assessments		
	Target responsibility (9 points)	Structural adjustment (7 points)	Energy saving in key areas (21 points)
	Key projects (2 points)	Technology promotion (2 points)	Support policy (6 points)
	Market mechanism (4 points)	Supervised check (3 points)	Energy-saving management and service (6 points)
100 points total			

Source: Energy Administration of Zhejiang Province, Implementation Plan of the "Dual Control" Assessment of Total Energy Consumption and Intensity of the Municipal People's Government of Zhejiang Province during the 13th Five-Year Plan Period (https://fzggw.zj.gov.cn/art/2018/1/5/art_1599544_30220003.html, accessed on 1 May 2022), 2017.

Table 3 reports the environmental protection performance assessment plan of Zhejiang Province, in which approximately 40% of the indicators are quantitative and approximately 60% are qualitative. The assessment base is the relevant documents issued by the regional government and the on-site inspection results of the superior government. Paper documents and the on-site inspection of the superior government can determine 60% of the assessment results of the regional government. The subjectivity and manoeuvrability of the assessment results are high. It did not give full play to the role of performance management in promoting the carbon emission reduction work of regional governments, yet it did provide an opportunity for regional government leaders to maximize their personal achievements.

Notably, if the annual energy consumption intensity reduction target is not fulfilled, the assessment result will be at an incomplete level. In the reward and punishment measures, the accountability system and the "one-vote veto" ("One-vote veto" means that the overall performance of government officer will be consider as negative if they fail to complete the energy-saving and emission-reduction tasks, even though they perform well in other aspects. Under this setting, government officers will pay significant attentions to carbon reduction instead of economy development and even people's living, which leads to scenario like power restriction case in Zhejiang, China) system are implemented for assessment objects that fail to complete the annual energy consumption intensity control target. For example, the corresponding local municipal people's government will be held accountable, and members of its leadership team will not have the opportunity to participate in that year's pre-assessment to be selected as excellent and advanced. The promotion of leaders will be affected, and a municipal people's government that fails

to complete the assessment targets of total energy consumption will receive criticism, interviews will be conducted, and the higher-level government will also suspend or restrict the approval of high-energy-consuming projects in the city. The intensity of punishment is unprecedentedly severe.

Figure 1 is a review of the local authorities' environmental protection assessment results [75–78], which shows that a few cities in Zhejiang Province fail the target, such as Ningbo, Jinhua, and Taizhou.

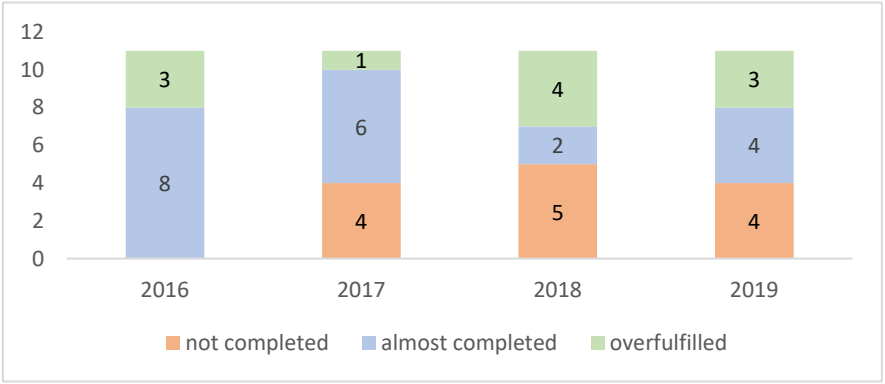

Figure 1. Distribution of the target assessment results in Zhejiang Province from 2016 to 2019. Source: Zhejiang Provincial Development and Reform Commission, Announcement on the Evaluation Results of the Energy "Dual Control" Target Responsibility Evaluation of Districts and Cities in 2016–2019, 2017–2020.

Public concerns about local authorities' environmental protection performance management have arisen and called for more flexible approaches, such as appropriately adjusting the ambiguity of assessment objectives to prevent subordinate officials' fluke mind [79]. According to Table 4, cities that did not meet the assessment standards (such as Jinhua) hoped to catch up with the target, such as issuing a power restriction order. Considering that some cities overfulfilled their targets while other cities failed to achieve them, a trading mechanism for energy consumption rights in the regions seems appropriate, which would be conducive to further improving the rationality of energy consumption rights allocation, reducing energy consumption costs and increasing economic benefits.

Table 4. The Assessment Results of Energy "Dual Control" in Zhejiang Province and the Issuance of Power Restriction Order.

Cities	2016–2019 Assessment Result	Issue of Power Restriction Order
Hangzhou	Meeting targets in four years	No
Zhoushan	Meeting targets in four years	No
Wenzhou	Meeting targets in four years	Yes
Jiaxing	Meeting targets in three years, one year not meeting target	No
Shaoxing	Meeting targets in three years, one year not meeting target	No
Chuzhou	Meeting targets in four years	No
Lishui	Meeting targets in three years, one year not meeting target	No
Ningbo	Not meeting targets in three years, one year meeting target	Unknown
Huzhou	Meeting targets in three years, one year not meeting target	Unknown
Jinhua	Not meeting targets in three years, one year meeting target	Yes
Taizhou	Not meeting targets in three years, one year meeting target	Unknown

Source: Nectar Gan and Zhejiang Provincial Development and Reform Commission, China turns off the lights in 'Christmas town' as an officials race to meet energy targets; Announcement on the Evaluation Results of the Energy "Dual Control" Target Responsibility Evaluation of Districts and Cities in 2016–2019, 2020; 2017–2020.

4.2. Summary of the Key Findings from the Case

As discussed above, the power restriction incident in Zhejiang placed pressure on the local government to complete the energy conservation and emission reduction assessment targets. This conflict between economic development and energy conservation and emission reduction shows the contradiction between environmental protection and economic development in China, which calls for government leaders' ability to coordinate and handle the relationship between the two to achieve sustainable development. It requires not only the implementation of the basic national policy of resource conservation and environmental protection and the construction of an ecological civilization but also guaranteeing healthy economic growth, meeting people's needs for a better life, and achieving green, low-carbon and circular development. From the power restriction incident in Zhejiang, we identified the following areas that can be improved:

(1) The formulation of performance targets lacks scientificity and flexibility

Since the 1990s, the circular economy of China has developed from top to bottom, led by the government, through government subsidies and direct or indirect investment to support related enterprises to promote the development of the circular economy [80]. In recent years, due to the deterioration of the ecological environment, the Chinese government has paid more attention to energy conservation and emission reduction, and it directly regards environmental protection indicators as government performance indicators [46]. According to the power restriction case in Zhejiang, we observe that some cities under "one-vote veto" pressure failed to complete the energy-saving and emission-reduction assessment targets many times, which shows that the distribution of emission reduction tasks among cities still has room for improvement; for example, targets are not set based on different energy consumption structures and economic development needs in different regions. The power restriction incident even showed the divergence between economic development goals and environmental protection goals, which led the assessed municipal governments to engage in the undesirable behaviour of sacrificing the economic interests of enterprises to achieve the goals of energy conservation and emission reduction.

Rooms of improvement from the circular economy aspect are revealed in this power restriction incident: first, most companies' response to the government's energy conservation and emission reduction requirements was to cope with temporary, not spontaneous, fundamental and persistent market behaviour. The policies and measures implemented by the government to complete the energy conservation and emission reduction assessment requirements did not help enterprises upgrade from the mode of production with high emissions and high energy consumption to the green and low-carbon cycle. Therefore, when orders increased significantly during the pandemic, most companies still use traditional high-energy-consuming production methods to work overtime to complete orders, which in turn triggered the government's power restriction action. Second, the sustainable development of the circular economy relies on both the government and the market, as well as the two carriers of enterprises and residents. Regional integration acknowledging their differences should be in place when setting the assessment standards as well as necessary assistance for enterprises for upgrading and transformation while driving the participation of the entire society. For example, adequate financial support, such as zero-interest loans or even government subsidies is expected to support the upgrading of the enterprise electricity consumption system. On the other hand, empirical research shows that green finance can also play a significant role in carbon reduction [81].

(2) Defects in the government's internal control mechanism

Government internal control serves the purpose of risk management [82], such as corruption prevention [83]. A lesson from the U.S. government practice shows that to ensure the effectiveness of the internal control mechanism, it is important to set up a monitoring and evaluation framework for the public sector [84]. The internal control of the government for the construction of the circular economy based on energy conservation

and emission reduction is flawed. This leads to a problem for the government when setting the assessment targets in the process of realizing the energy conservation and emission reduction assessment targets. The internal control of the government refers to the dynamic management process of preventing, controlling, supervising and correcting the risks of various government business activities.

In the process of realizing the goals of energy conservation and emission reduction, governments at all levels in Zhejiang Province formulated only energy conservation and emission reduction goals, implementation policies and procedures, and assessment methods for each district and city, and they lacked the necessary measures for dynamic monitoring and correction in the entire process of goal realization [73,74]. The COVID-19 outbreak that occurred at the end of 2019 made the economic situation in 2020 pessimistic. The suspension of work and school due to the need for pandemic prevention and control helped to achieve the emission reduction target to a certain extent. Owing to the Chinese government's strong anti-pandemic measures, enterprises resumed work and production quickly, while the pandemic situation in other countries in the world became increasingly serious, causing China's export industry to thrive even more, and factories needed to work overtime to meet the global needs for anti-pandemic materials. At this time, an irreconcilable conflict between economic development and environmental protection appeared, which required the higher-level government to adjust the assessment objectives and reward and punishment methods in a timely manner. However, in fact, due to the defects of the government's internal coordination system, the higher-level government did not pay attention to the possible risks caused by changes in social and economic conditions, nor did it adjust the assessment objectives and policy requirements in a timely manner. A conflict between economic development and energy conservation and emission reduction emerged, and the mandatory requirements of meeting carbon reduction had a certain negative impact on the economy and people's lives.

(3) The lack of interactive feedback in performance management

Energy conservation and emission reduction is a medium-term goal, while the development of a sustainable circular economy is a longer-term goal, which means that its performance appraisal goal cannot be formulated once without further adjustment. The appraisal and evaluation framework for local authorities not only supports the evaluation, control, budget and incentives of local authorities, but also an opportunity for local authorities to learn and improve further [85]. Therefore, this study adopts the balanced score card approach, so that local authorities can understand what it takes to achieve the (carbon reduction) goal. The frequency of assessment of energy conservation and emission reduction in Zhejiang Province is once a year, and there is no effective feedback mechanism between the upper and lower levels [73,74]. The lower-level executive department failed to provide timely feedback on the problems in the process of goal realization to the upper-level assessment department. Meanwhile, the assessment department did not make full use of the assessment results to further analyse the performance information and determine the reasons underlying the unsatisfactory performance of the lower-level governments. As a result, the lower-level governments failed many times and could not truly achieve the goal of controlling the total amount and intensity of energy consumption. Therefore, only by further improving the performance management system can the goals of energy conservation, emission reduction and economic development be more efficiently achieved.

5. Government Performance Management Recommendations

5.1. Clarifying the Goals of Government Performance Appraisal

It is important to clarify the purpose of government performance appraisal, for example, to "distinguish the good from the bad, reward the good and punish the bad, motivate responsibility, and promote development" [86]. The assessment of work performance should pay greater attention to the actual results of the leadership team in meeting the people's growing needs for a better life. For performance assessment related to building a

large domestic circular economy and achieving carbon reduction, attention should be given to both economic development and environmental protection, and it should be clarified that energy conservation and emission reduction are for a healthier economy and a better life for people. Therefore, when constructing performance appraisal targets, it is necessary not only to establish energy conservation and emission reduction targets but also to determine the requirements for ensuring people's livelihood and creating a good business environment.

At the same time, government performance appraisal is not a simple decomposition of goals into the annual goals of local authorities. Rather, it is a tool used to urge and motivate the government to fulfil its fiduciary responsibilities and make maximum contributions to strategic goals. Therefore, when setting goals, first, it is necessary to increase the participation of government cadres in the goal-setting stage, clarify the causal relationship between assessment contents and assessment objectives, and improve the perception and understanding of the objectives of the officials being assessed [79]. Regarding the causal relationship with the target, government officials can directly take the assessment results as the guide and formulate specific improvement measures based on the assessment results to achieve the expected goals. Second, based on the importance of the goals, quarterly, annual, mid-term and long-term goals should be set. The more important goal milestones should be set in more detail to conveniently check and update the progress on each goal. In addition, for targets with greater uncertainty, the superior department should use its own information and platform advantages to provide its predicted future difficulties and risks, as well as relevant coping strategies. The final expected result is that each level of government and each department will be able to identify their own responsibilities, and while improving their own performance, they will be able to make their greatest contribution to the construction of the domestic circular economy and the realization of carbon peaking and carbon neutrality.

5.2. Allocation of Carbon Emission Indicators from the Perspective of the Circular Economy

In the power restriction case of Zhejiang Province, this paper cannot identify the specific reasoning behind such an allocation plan of energy consumption from the provincial government to the subordinate local authorities. Considering the fact that the occurrence of power restriction shows that a simple and arbitrary allocation of carbon emission quotas can lead to a strong conflict between environmental protection and economic development, this study calls for scientifically allocating reasonable carbon emission quotas, following the circular economy approach. Previous studies have reviewed the approaches taken by provincial governments to determine the carbon emission quota [51–55]. This evidence can be useful to determine city-level carbon emission allocation systems in conjunction with city characteristics and circular economies. Previous literature has initiated systematic research on the allocation approach since 2017 [52,55]. However, the government rarely adopts these approaches, which could be overly complex and involve excessive workload, or the government cannot expect severe consequences due to unreasonable carbon emission allocation quotas. They choose the simple allocation approach and leave pressure and responsibility to the lower-level government. Therefore, this paper suggests that carbon emission quota allocation should begin with simple basic factors and then combine with carbon reduction indicators related to the circular economy.

Population size, GDP, per capita GDP, historical cumulative carbon emissions, the marginal cost of emission reduction, energy intensity and carbon intensity are currently highly recognized factors that should be used for fundamental analysis and the associated adjustment. Although the energy consumption is an important source of carbon emissions and is highly correlated, the allocation of energy consumption and carbon emissions at the same time can better reflect the local energy needs and increase the coordination/synergistic effect of GDP improvement [87]. Therefore, this paper proposes incorporating carbon intensity factors. Previous literature mainly focuses on how to achieve the optimal output from a theoretical perspective [51–55] and pays little attention to the implementation capacity of regions. For example, Jinhua city, Zhejiang Province, has not achieved the

goal of energy conservation and emission reduction for three consecutive years, and the provincial government has not updated its assessment goals for the next three years since 2018. Therefore, this paper suggests adding the factor of "completion in previous years" to the allocation of carbon emission quotas.

There are differences in the economic structure, resource endowment, scientific and technological development level, environmental protection values and other aspects of each city, which may lead to different energy demand and carbon emission levels. Therefore, to regard the whole province as a circular economy, each city or city cluster within the province should determine/clarify their specialty according to their urban characteristics and undertake the corresponding tasks of energy conservation and carbon emission reduction, to achieve the carbon reduction target collaboratively and with high efficiency.

In the allocation of carbon emission goals, considering distinct carbon emission reduction potential and the associated capacity between different industries [57], it is necessary to consider the industrial structure of each city and evaluate the energy consumption intensity and carbon intensity of its leading industries. For example, it is necessary to evaluate whether most industries in the city are at a high carbon intensity level or whether the overall carbon emissions are increased due to the high carbon intensity of a certain type of industry. It is more difficult to deal with the first case, since governments are facing a more complex situation, involving more enterprises and more difficulties to manage, which leads to a lower corresponding goal of carbon emission reduction. We can also assess the cost of how relevant industries transition to green and low-carbon emissions, such as the high emission reduction cost of light industry and high-tech industry, and the relatively low emission reduction cost of high energy consumption and heavy chemical industry [57]. For cities with leading industries that are in the lower reaches of the industrial chain, there is low production value and high emissions, such as the textile and hardware industries in Jinhua. If we set up overly strict and radical emission reduction goals, while it can reduce production in the short term, if the industry does not transform into high production value, there is a high possibility of a rebound in the later stage. Therefore, a slow-paced but orderly emission reduction plan needs to be implemented. Therefore, the industrial structure of each city can be comprehensively considered [88], and the energy consumption intensity, carbon intensity, carbon emission reduction cost and future development prospects of leading industries can be evaluated.

The scientific and technological level of a city will also affect its ability to achieve carbon emission reduction in the circular economy [56]. Cities with a large number of high-tech enterprises and talent reserves are more likely to take the lead in achieving technological breakthroughs in energy conservation and emission reduction. They can potentially reduce emission reduction costs, improve energy efficiency, and expand the use of renewable energy [89]. Therefore, cities with a higher level of science and technology are expected to have a stronger ability to achieve carbon emission reduction targets and can allocate higher carbon emission reduction targets. At the same time, how much consumers evaluate the importance of low carbon is also an important factor affecting the effect of carbon emission reduction. When the general public has a higher acceptance level of the low-carbon concept, they are more likely to choose a low-carbon lifestyle in their daily life, such as choosing public transportation, purchasing energy-saving products, and turning off power lights in time, to reduce the carbon emissions of each individual. Generally, residents' willingness of low-carbon consumption arises with the education level [90], and residents in suburban areas have the strongest willingness to consume low-carbon, followed by urban residents and finally rural residents [91]. Taking the effect of climate shock on corp production, Elahi et al. indicate that in addition to setting adequate disaster prevention measures, the improvement of farmers' cognition of disasters due to climate shock and the associated psychological readiness is important. Such findings have implications in carbon reduction setting, which calls for efforts from the general public and business entities, in addition to government [40]. This shows that it is also important to involve general public education in following the circular economy approach to carbon reduction. Therefore, the

proportion of the population with a bachelor's degree or above and the urbanization rate can be used to measure residents' low-carbon consumption willingness. Cities with higher low-carbon consumption willingness can set higher carbon emission reduction targets.

Above all, all the factors that we think should be considered when determining the carbon emission reduction target are sorted out in Table 5. In Table 5, in the "Association with carbon reduction" column, the "+" indicates that the indicator is positively related to the number of carbon credits to be allocated, while a negative sign means the opposite.

Table 5. Considering factors of carbon reduction goal allocation under a circular economy.

Factor Category	Specific Factors	Association with Carbon Reduction
Fundamental factor	Population size	+
	GDP	+
	Per capita GDP	+
	Historically accumulated carbon emission volume	+
	Carbon reduction marginal cost	+
	Energy consumption intensity	+
	Carbon intensity	+
Enhance factor	times of "completed" in previous appraisals	−
	Economy structure	More detailed analysis is needed
	Clean energy storage volume	−
	Technology level	−
	The acceptance of low-carbon in consumers	−

Figure 2 outlines the industry cluster of Zhejiang Province. Specifically, the economic development of Hangzhou is dominated by the internet, software and information services, tourism, finance and cultural and creative industries, as well as high-end manufacturing [92]. Hangzhou has little dependence on energy, with low carbon intensity, high scientific and technological levels, and a strong driving force for carbon reduction, so it can set higher carbon emission reduction targets. Jinhua, another city in Zhejiang Province, has textile and clothing, hardware manufacturing, core optoelectronics, automobiles and parts and components as the leading industries [93]. These industries in Jinhua are mainly small and medium-sized enterprises, with small scale and low profits. Therefore, the cost of green and low-carbon transformation is high, and carbon emission reduction is difficult, so we can set a slow-paced and orderly carbon reduction goal. Zhoushan, a city in Zhejiang Province, has great advantages in the petrochemical industry, ship building, power production and aquatic product processing [94]. At the same time, it has rich renewable energy reserves such as photovoltaic and wind power. Accordingly, a higher carbon emission reduction target can be set.

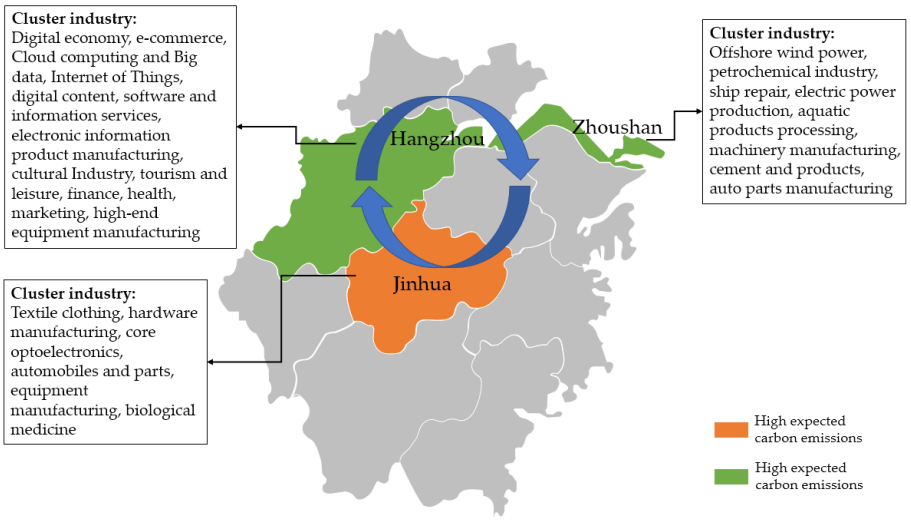

Figure 2. Example of an intercity circular economy in Zhejiang Province.

Finally, the circular economy is within a specific macro environment, which is full of uncertainty. The corresponding carbon emission reduction targets should also be adjusted appropriately to adapt to changes in the macro environment. For example, natural disasters such as epidemic that may lead to stagnation of economic production and consumption may be conducive to the realization of carbon emission reduction targets. However, after the epidemic is controlled, the state has policy requirements to promote economic recovery. At this time, economic development is a more important requirement, and the requirements for carbon emission reduction should be appropriately relaxed. When economic operations become stable, the goal of carbon emission reduction can be gradually improved. Provincial governments should constantly observe the changes in the macro environment and its impact on economic development and carbon emission reduction to timely adjust the carbon emission reduction targets allocated to subordinate cities. Therefore, it is necessary to conduct more frequent verification and evaluation of the carbon emissions in each city. It is suggested to publicize the carbon emissions of each city every month or quarter and require the responsible department to explain the reasons for the deviation from the plan and put forward further emission reduction plans.

Previous discussions point out the selection of a large number of factors related to carbon emission reduction and the circular economy to formulate the carbon emission reduction target that best meets the characteristics of each city, as well as the adjustment of such a target monthly or quarterly to make them more adaptive to the changes in the macro environment. This paper argues that there may still be factors that have not been taken into account, which will inevitably have an adverse impact on the carbon emission reduction of a city, while another city could exceed the carbon emission reduction target. Therefore, the establishment of a carbon emission trading market, as well as the carbon tax scheme, as market instruments, seems appropriate.

5.3. Carbon Emission Trading Market and Carbon Tax as Market Instruments

The literature focuses on the carbon emission trading market between enterprises and on the provincial level [95–99]. Compared with the government-led policy of carbon emission plans, the provincial carbon emission trading market can change the regional allocation of energy consumption and carbon emissions, which can reduce carbon emissions [98] and even produce synergistic effects with other pollutants (such as sulfur dioxide) [99]. Therefore, it is reasonable to discuss the establishment of a city-level carbon emission trading market, which allows cities to trade their allocated carbon emission quotas. In the case when a city exceeds the carbon emission quota, it can choose to purchase a carbon emission quota with public funds. This prevents local authorities from taking severe actions,

such as cutting off the electricity supply for enterprises and forcing them to shut down production. At the same time, such a trading market can also be seen as a mechanism of providing extra economic subsidies to the cities that are willing to give up industries of high energy consumption and high emissions, encouraging them to continue their green and low-carbon transformation.

There are a few steps involved in setting up the carbon emission trading market. First, the authorities need to determine the total carbon emission goal to achieve the carbon reduction goal. For example, when the economy is in the expansion period, authorities can consider relaxing the upper limit of carbon emissions and tightening the upper limit during a recession [100]. In the Chinese setting, the central authority allocates the carbon emission quota to the provincial government and then the city-level government. The local authorities assign carbon emission quotas to enterprises. The carbon emission allocation between provinces and cities should consider the indicators discussed in this study, following the government performance indicators. The carbon emission allocation can reference the European Union (E.U.) and the U.S. to adopt a market a market-oriented quota allocation model such as auction to increase the market liquidity and volatility of carbon trading [101]. In the specific implementation process, we can start the pilot scheme with key carbon emission industries and cities, and the carbon trading mechanism can be improved according to the feedback and experience of the pilot market [102]. Finally, the government should correctly understand its role in carbon trading and play a good role in supervision and management. Through the synergy of government intervention and market mechanisms, effectively achieve the carbon emission reduction goal [71].

A carbon tax is a fiscal measure, which sets a fixed price for carbon emissions and allows emissions to fluctuate [103]. At present, China has not imposed a carbon tax, but the United Kingdom, Sweden, Finland and other countries and regions have begun to implement it. The key to levying carbon tax is to determine the appropriate tax rate and the distribution of carbon tax income. A higher tax rate may lead to a change in carbon-related consumption/production behavior, and a lower interest rate may be more suitable for raising funds for carbon emission reduction projects [104]. In addition to a single tax rate, the carbon tax can also be designed as a progressive format. When enterprises fail to meet the emission reduction goal, the tax rate will automatically increase [105]. A carbon tax can effectively reduce carbon emissions, but it may have a negative impact on economic development and social welfare. Therefore, a carbon tax circular system (such as reducing individual income tax when setting up carbon tax) may achieve carbon reduction and promote economic growth at the same time [106]. In terms of carbon tax revenue distribution, there are many ways to choose, which can be used for carbon emission reduction project investment (such as Quebec), returned to consumers (such as the United Kingdom), or become a part of the government budget (such as Sweden) [104]. Ultimately, all carbon tax revenue should be recycled to the economy in the form of a lower tax burden, and recycling with the goal of continuously obtaining further energy efficiency gains [107].

5.4. Designing a Performance Appraisal System from a Systemic Perspective

The adoption of a circular economy approach to achieve carbon reduction is a long-term and systematic project. In the process of performance management, system thinking should be fully utilized, combined with the characteristics of the circular economy, and all elements in the system should be comprehensively considered. Regarding the geographical factors, it is necessary to fully consider the economic development level and geographical environmental conditions of each city in the province to find the best positioning and the best targets for each city. If the targets are challenging but do not exceed their ability, they can fully stimulate the motivation to achieve the goal. In addition to setting up the carbon emission goal as discussed above, this study proposes an evaluation factor framework according to the circular economy. This study establishes a basic balanced scorecard framework, the government's strategic map framework (Figure 3), and the specific scoring factor system (Table 6), which allows more scientific and reasonable use

of government performance management to implement a circular economy and carbon emission reduction. The performance evaluation system of the circular economy can be used as a reference to design the framework of the government performance evaluation system for carbon reduction. For specific design ideas, we design the basic framework of the balanced scorecard, a strategic map, and a scorecard for performance appraisal.

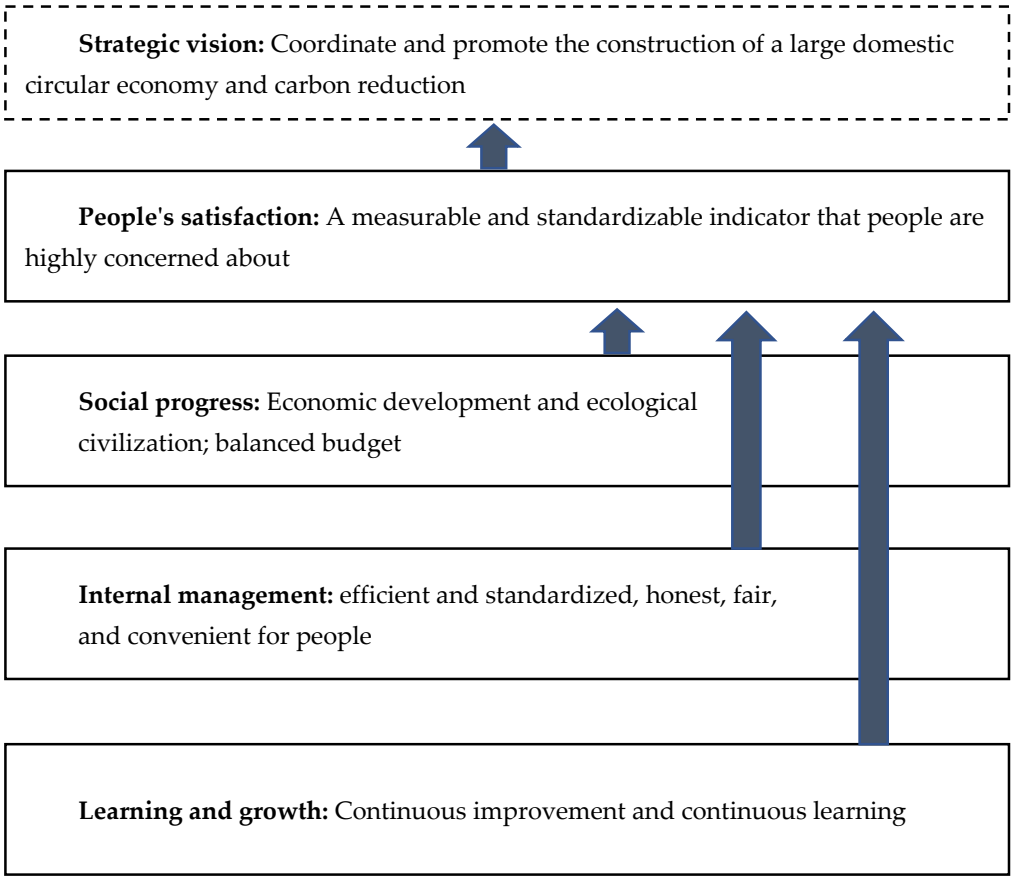

Figure 3. Example of strategy map architecture.

A balanced scorecard is a management approach proposed by Robert Kaplan and David Norton in the 1990s [108]. As Figure 4 shows, enterprises can start with their own strategy and vision, find key success factors from the four aspects of finance, customers, internal processes and learning and growth, and then formulate performance evaluation indicators to comprehensively evaluate how enterprises realize their strategies. In the balanced scorecard, the basic framework of performance management is roughly divided into the following four steps. First, it is necessary to clarify the strategic vision of the government: to realize the overall promotion of building a large circular economy and carbon reduction in the process of transforming and upgrading production, circulation, distribution and consumption to achieve the harmonious coexistence of economic development and green and low-carbon. Such a consensus should be formed among government personnel that the goal of performance management is to allow the government to achieve carbon reduction on the basis of ensuring people's livelihood and orderly production while simultaneously meeting the strategic requirements of building a circular economy. Second, through communication and education between the upper and lower governments, reasonable goals should be set, and reward and punishment arrangements and accountability mechanisms corresponding to the goals should be established. Third, we identify a detailed target index, action plans, resource budgets, and milestones. Finally, we provide strategic

feedback, summarize our own contribution to the strategy, reflect on deficiencies and research solutions, and arrange for further learning.

Table 6. Government balanced scorecard indicator system.

Balanced Scorecard Indicator Dimensions	Indicators	Weights (%)	Targets
People's Satisfaction	Employment rate		
	Average wage level		
	Number of cultural activities in the city		
	Number of urban parks		
	Natural population growth rate		
Social Progress	per capita GDP		
	proportion of strategic emerging industries to GDP		
	proportion of tertiary industry		
	The Proportion of Science and Technology and Education Investment in GDP		
	energy consumption per unit of GDP		
	carbon emissions per unit of GDP		
	land development intensity, green building proportion		
	proportion of public transport trips		
	balanced budget		
Internal Management of the Government	continuous improvement capability,		
	time of correcting mistakes		
	response of discovering mistakes		
Learning and Growth	staff training and knowledge management		
	Internal communication		
	individual objectives achievement		

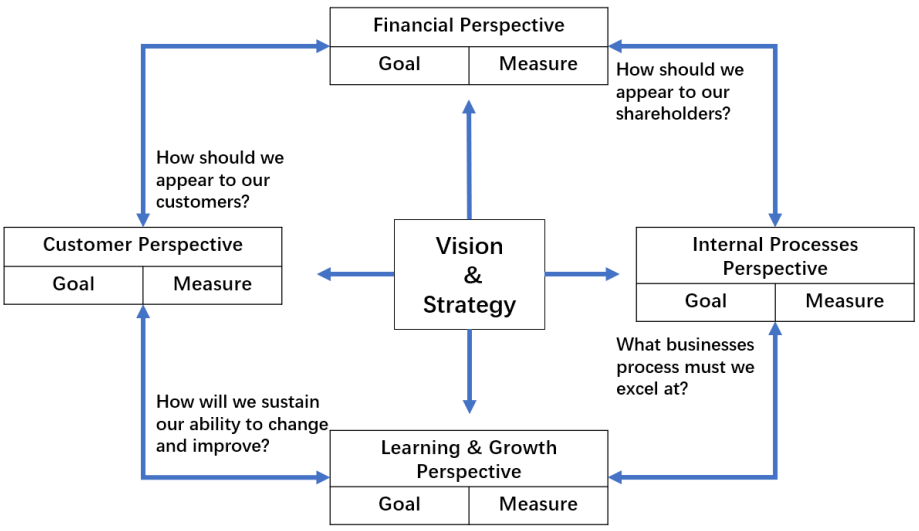

Figure 4. A Balanced Scorecard Framework [109].

In the enterprise setting, the use of a balanced scorecard emphasizes financial performance. However, the government is a nonprofit organization, and its ultimate goal is not to maximize profits but to satisfy the general public. Kaplan and Norton also advocate citizen satisfaction as one of the important evaluation dimensions to promote the development of the public sector [109], as citizen satisfaction can improve the quality of governance and lead to more satisfaction and trust of citizens [110]. Therefore, this paper interprets the financial performance in the balanced scorecard as both a balanced budget and people's satisfaction. Chinese local authorities are responsible for balancing the budget while achieving the carbon reduction target. This means that when they set up the carbon reduction goal, they also need to consider whether such a carbon reduction target will limit local economic development. Therefore, a balanced budget should be incorporated into the evaluation system. In the balanced scorecard, customer satisfaction, internal processes, learning and growth dimensions are all aimed at optimizing financial performance and maximizing shareholders' interests [111]. However, since the government serves the general public, including both citizens and business entities, it appears that citizens outweigh business entities in regard to political power stability. Therefore, this paper argues that while both a balanced budget and people's satisfaction are important when we discuss the financial perspective, people's satisfaction is more important. Thus, we propose setting people's satisfaction, which also partly represents the customer perspective, as the first level of the performance indicators. The dimension of social progress, including economic development and ecological construction, represents both the financial and customer perspectives. This order of the performance indicators follows the circular economy approach to achieve the goal of carbon emission reduction to balance the needs of economic development and environmental protection. Finally, we propose four levels of performance indicators, including people's satisfaction, social progress, internal management, and learning and growth, to be designed from top to bottom. This is shown in Figure 3, to form a closely connected and supported unity and guide the government to realize the strategy target in an efficient and coordinated manner.

The first layer is the performance indicators of people's satisfaction because the government's purpose is to serve people and satisfy people's wishes for a better life. People's satisfaction can be measured by indicators such as employment rate, average wage level, number of cultural activities in the city, number of urban parks, natural population growth rate, etc. [112]. More importantly, as we learn from this power restriction case in Zhejiang China, a stable electricity supply is among the public's important needs. Therefore, a stable electricity supply is also included.

The second layer is social progress, which includes three parts, i.e., economic development, ecological civilization and a balanced budget. This layer is an important support for strategic goals and a path to ensure people's satisfaction. In terms of economic development, we propose a few indicators, such as per capita GDP, the proportion of science and technology and education investment in GDP, the proportion of strategic emerging industries to GDP, and the proportion of tertiary industry. In terms of ecological civilization, indicators such as energy consumption per unit of GDP, carbon emissions per unit of GDP, land development intensity, green building proportion, and proportion of public transport trips can be used to measure the government's implementation of the green and low-carbon concept [113]. Both economic development and ecological civilization correspond to the two goals of constructing a large domestic circle and achieving carbon reduction. The last part is a balanced budget, which falls within the scope of financial performance and is strongly related to economic development. It ensures the continuous administration of the local authorities.

The third layer is the internal management of the government. Although performance management is result oriented, this does not mean that we do not need to assess the internal management process of the government. Efficient and standardized internal management and organizational capabilities are necessary conditions for the government to achieve its strategic goals. A clean, fair and convenient government can also improve

people's satisfaction. The performance indicators of internal management can include process continuous improvement capability, time of correcting mistakes, the response to discovering mistakes [114], etc.

The fourth layer is learning and growth. Since neither the strategic environment nor the strategy itself is static, the government needs continuous learning and growth. It is suggested that the effect of the government's correction of work based on the assessment results should be included within the scope of the assessment to promote the government's enthusiasm for making full use of the assessment opinions and taking the initiative to learn. The assessment results should focus on absorbing and applying the results of inspections, audits, work inspections, and business assessments of relevant departments to strengthen the communication and comprehensive use of information among various departments within the government. Specific indicators may include staff training and knowledge management, internal communication, and individual objective achievement [114].

Overall, the ability to learn and grow is an indispensable basic ability, and improving this ability can drive an improvement in the indicators of the three levels of government internal management, social progress and people's satisfaction. The efficient internal management of the government guarantees the implementation of relevant policies that promote social progress, and as society progresses, people's satisfaction increases. Therefore, this strategic framework establishes a unified and coordinated whole and promotes the realization of strategic goals in a coordinated manner. In addition, we recommend that a special department be set up to be responsible for performance management as well as target determination and indicator design, to make public announcements in a timely manner, to solicit opinions from deputies of the National People's Congress, members of the National Committee of the Chinese People's Political Consultative Conference (CPPCC) and the general public and to scientifically determine the weight of each indicator. We propose an example of the indicator system in Table 6.

5.5. Emphasis on Interactive Feedback and the Use of Results

The interactive feedback link in government performance management needs to be strengthened. We recommend providing continuous information feedback channels to increase the enthusiasm of local governments to participate in the construction of the large domestic circular economy, to achieve carbon reduction goals and to ensure that local governments recognize, understand, and implement performance goals. In the assessment time dimension, it is important to establish a dynamic assessment mode or increase the assessment frequency, consistent with the assessment objectives, changing the original annual assessment to semiannual or quarterly assessment to discover more effective information through assessment. Frequent interactive feedback work will generate more performance information. In addition to linking performance appraisal results with accountability and serving as a warning to the government, it is necessary to further build a system for the use of appraisal results. For example, in the first stage of unqualified assessment, the responsible department should be required to submit a cause analysis and improvement plan, and in the second stage of unqualified assessment, when submitting the improvement plan, the higher-level government should consider adjusting the target content and resource allocation [115] to drive the achievement of performance goals.

In the accountability of performance appraisal, it is necessary to prevent adverse selection caused by excessive post-event control and punishment. As evidenced in the above power restriction case, local authorities may not hesitate to sacrifice the normal production of enterprises and the basic needs of residents to achieve the assessment goal of energy control. Therefore, the performance results should be used for both negative control and active guidance, giving full play to the innovative potential of front-line local government leaders to build a large domestic circular economy and achieve carbon reduction goals. The "one-vote veto" system should be adopted for indicators involving the ecological bottom line and the economic bottom line, and other performance goals should mainly be based on incentives and persuasion, using competition evaluation and

other methods, emphasizing learning and improvement in competition, and realizing the synergy of development. Finally, to pay attention to the performance management interactive feedback and results, it is also necessary to use important forces outside the government to establish a sound performance management information disclosure system. For example, drawing on the practice of the United States [115], we can disclose and update the content of government performance goals, responsible persons, budget expenditures, contributions to the goals, and performance evaluation results on the official website of the competent department in a timely manner so that residents and enterprises can understand various strategic objectives and the progress of specific government projects. On the one hand, these external actors can exercise supervision rights and raise objections based on performance information that is different from their real feelings; on the other hand, they can also use this information to predict government behaviour and make behavioural decisions that are beneficial to themselves. For example, in the Zhejiang power restriction incident, if an enterprise had predicted that the government would issue a power restriction order because it could not complete the energy control assessment target in time, the enterprise could have taken measures such as shifting production in advance or accepting fewer orders to reduce losses to the minimum.

5.6. Actively Introduce Third-Party Forces

As an independent professional organization, a third-party organization is an important professional force in the government's performance evaluation, and it is beneficial for improving the independence and credibility of performance evaluation. The advantages of third-party institutions, such as academic institutions of teaching and research, lie in their independence and professionalism [116], especially in the monitoring of carbon emissions and in generating corresponding statistics because third parties can use more professional equipment and measurement standards for efficient and accurate measurement. In terms of making suggestions for improvement, third-party organizations can provide perspectives and ideas that are different from those within the government, improving the administrative efficiency of the government and thereby reducing the burden on society and building a healthier domestic circular economy. However, at the same time, we cannot rely too much on the performance evaluation results of third-party organizations because the current level of such organizations is uneven, industry standards and thresholds have not yet been established, and local governments are not professional enough to identify third-party organizations [116]. Moreover, there will always be information asymmetry and information bias between a third-party organization and the department being assessed; thus, its evaluation results may not be 100% correct and cannot be excessively relied upon.

5.7. Improving the Government's Internal Control

The power restriction case shows that the current internal control of the relevant government still has certain defects. For example, government management lacks risk awareness, and there is no scientific risk assessment for accidents that occur inside and outside the government or relevant measures or mechanisms to test the effectiveness of internal control, which mainly relies on the supervision of higher-level departments or third-party organizations and people. Recent research show differences in governance level of cities in the Yangtze River city group [88], for the government to better fulfil the environmental responsibility entrusted to it by the public, it is necessary to strengthen the risk awareness in the consciousness of government leaders, clarify the internal control responsibilities of relevant government departments in the system, and try to implement regular internal control evaluations in accordance with unified internal control standards. This is to enable governments at all levels to use internal control to detect risks in a timely manner when completing the construction of the large domestic circular economy and achieving the carbon reduction goals and more effectively implement prevent prevention, in-process control, postevent supervision and correction. As revealed in previous literature,

the use of new technologies like cloud computing and big data analytics [117], can assist in the improvement of internal control efficiency.

6. Conclusions

By analysing the current literature on the circular economy, this paper finds that there are few studies on government performance management under the circular economy. By analysing a specific case of conflicts between energy conservation and emission reduction goals and economic development, as represented by the power restriction order in Zhejiang Province at the end of 2020, this paper finds that in the process of realizing sustainable development goals and developing the circular economy, the government faces difficulties such as a lack of scientificity and flexibility in the formulation of assessment goals, a lack of interactive feedback in performance management and imperfect government internal control. Therefore, this paper discusses in depth how to use the theory of the circular economy from the perspective of developing a regional circular economy to promote the construction of the large domestic circular economy and improve the level of renewable and sustainable development of resources to help achieve carbon reduction while expanding the theoretical and practical boundaries of the circular economy. Both the theoretical and practical status quo poses new challenges to developing government performance management under the circular economy. This paper proposes some suggestions on performance management, such as clarifying the objectives of government performance appraisal, allocating carbon emission indicators from the perspective of the circular economy, designing the performance appraisal system using the systematic concept, emphasizing the work of interactive feedback and the use of results, actively introducing third-party power, and improving the internal control of the government.

This study presents three main limitations that can be further improved upon in future studies. First, this case study investigates the singular case of Zhejiang China, which may not apply in other provinces or countries. In fact, Zhejiang has a strong economy and diversified industry settings, which provides an ideal setting to apply a circular economy so that different industries can collaborate. Therefore, applying the research findings in this study to other regions needs to consider their capacity and resource endowment. Future studies can consider investigating regions with different industrial settings and economic sizes. Second, the case study in this paper is mainly based on external public information. There may be factors that are not considered in the analysis of the performance management process of the government of Zhejiang Province, and the reasoning of its decision-making process may not be comprehensive, which brings about second research limitations. Future studies can consider diversified research evidence, such as interviews with government officials. Third, although this study proposes the use of a circular economy to achieve carbon reduction, from the government perspective. We acknowledge the importance of involving the general public in the adoption of the circular economy for carbon reduction, whether it is from this aspect of improving the general public's awareness of carbon reduction needs, or incorporating the general public's opinions in, this study has not been able to quantify its effectiveness. Therefore, future studies can consider using a carbon calculation approach to measure the carbon reduction effect.

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References

1. Nectar, G.; China Turns off the Lights in 'Christmas Town' as Officials Race to Meet Energy Targets. CNN. 2020. Available online: https://edition.cnn.com/2020/12/25/business/china-power-shortage-intl-hnk-dst/index.html (accessed on 1 May 2022).
2. Geissdoerfer, M.; Pieroni, M.P.P.; Pigosso, D.C.A.; Soufani, K. Circular business models: A review. *J. Clean. Prod.* **2020**, *277*, 123741. [CrossRef]
3. Reim, W.; Parida, V.; Sjödin, D.R. Circular business models for the bio-economy: A review and new directions for future research. *Sustainability* **2019**, *11*, 2558. [CrossRef]
4. Suchek, N.; Fernandes, C.I.; Kraus, S.; Filser, M.; Sjögrén, H. Innovation and the circular economy: A systematic literature review. *Bus. Strateg. Environ.* **2021**, *30*, 3686–3702. [CrossRef]
5. Campagnaro, C.; D'Urzo, M. Social cooperation as a driver for a social and solidarity focused approach to the circular economy. *Sustainability* **2021**, *13*, 10145. [CrossRef]
6. Nohra, C.G.; Pereno, A.; Barbero, S. Systemic design for policy-making: Towards the next circular regions. *Sustainability* **2020**, *12*, 4494. [CrossRef]
7. Awan, U.; Sroufe, R.; Shahbaz, M. Industry 4.0 and the circular economy: A literature review and recommendations for future research. *Bus. Strategy Environ.* **2021**, *30*, 2038–2060. [CrossRef]
8. Bakker, C.; Hollander, M.D.; Hinte, E.V.; Zijlstra, Y. *Products that Last: Product Design for Circular Business Models*; BIS Publishers: Amsterdam, The Netherlands, 2014.
9. Peter, L.; Jakob, R. *Waste to Wealth: Creating Advantage in a Circular Economy*; Palgrave Macmillan: New York, NY, USA, 2015.
10. Li, J.; Sun, W.; Song, H.; Li, R.; Hao, J. Toward the construction of a circular economy eco-city: An emergy-based sustainability evaluation of Rizhao city in China. *Sustain. Cities Soc.* **2021**, *71*, 102956. [CrossRef]
11. Ye, M.; Deng, F.; Yang, L.; Liang, X. Evaluation of regional low-carbon circular economy development: A case study in Sichuan province, China. *Int. J. Clim. Chang. Strateg. Manag.* **2022**, *14*, 54–77. [CrossRef]
12. Van Bueren, B.J.A.; Iyer-Raniga, U.; Leenders, M.A.A.M.; Argus, K. Comprehensiveness of circular economy assessments of regions: A systematic review at the macro-level. *Environ. Res. Lett.* **2021**, *16*, 103001. [CrossRef]
13. Kristensen, H.S.; Mosgaard, M.A. A review of micro level indicators for a circular economy–moving away from the three dimensions of sustainability? *J. Clean. Prod.* **2020**, *243*, 118531. [CrossRef]
14. Boulding, K.E.; Jarrett, H. *Environmental Quality in a Growing Economy*; The Johns Hopkins University Press: Baltimore, MD, USA, 1966.
15. Pearce, D.; Turner, R. *Economics of Natural Resources and the Environment*; Johns Hopkins University Press: Baltimore, MD, USA, 1989.
16. McDonough, W.; Braungart, M.; Anastas, P.T.; Zimmerman, J.B. Peer reviewed: Applying the principles of green engineering to cradle-to-cradle design. *Environ. Sci. Technol.* **2003**, *37*, 434A–441A. [CrossRef] [PubMed]
17. Stahel, W.R. The Performance Economy: Business Models for the Functional Service Economy. In *Handbook of Performability Engineering*; Misra, K.B., Ed.; Springer: London, UK, 2008; pp. 127–138.
18. Graedel, T.E.; Allenby, B.R. *Industrial Ecology*; Prentice Hall: Englewood Cliffs, NJ, USA, 1995.
19. Benyus, J.M. *Biomimicry*; Harper Perennial: New York, NY, USA, 2002.
20. Hauschild, M.; Jeswiet, J.; Alting, L. From Life Cycle Assessment to sustainable production: Status and perspectives. *Cirp Ann. Manuf. Technol.* **2005**, *54*, 535–554. [CrossRef]
21. de Moraes Sa, J.-C.; Lal, R.; Cerri, C.-C.; Lorenz, K.; Hungria, M.; de Faccio Carvalho, P.-C. Low-carbon agriculture in South America to mitigate global climate change and advance food security. *Environ. Int.* **2017**, *98*, 102–112. [CrossRef]
22. Sarja, M.; Onkila, T.; Mäkelä, M. A systematic literature review of the transition to the circular economy in business organizations: Obstacles, catalysts and ambivalences. *J. Clean. Prod.* **2021**, *286*, 125492. [CrossRef]
23. Hailemariam, A.; Erdiaw-Kwasie, M.O. Towards a circular economy: Implications for emission reduction and environmental sustainability. *Bus. Strateg. Environ.* **2022**. [CrossRef]
24. Herrador, M.; de Jong, W.; Nasu, K.; Granrath, L. Circular economy and zero-carbon strategies between Japan and South Korea: A comparative study. *Sci. Total Environ.* **2022**, *820*, 153274. [CrossRef]
25. Dinca, G.; Milan, A.-A.; Andronic, M.L.; Pasztori, A.-M.; Dinca, D. Does circular economy contribute to smart cities' sustainable development? *Int. J. Environ. Res. Public Health* **2022**, *19*, 7627. [CrossRef]
26. The Central People's Government of the People's Republic of China. Circular Economy Promotion Law of the People's Republic of China. 2008. Available online: http://www.gov.cn/flfg/2008-08/29/content_1084355.htm (accessed on 1 May 2022).
27. Tang, J.; Tong, M.; Sun, Y.; Du, J.; Liu, N. A spatio-temporal perspective of China's industrial circular economy development. *Sci. Total Environ.* **2020**, *706*, 135754. [CrossRef]
28. Lu, C.; Zhang, Y.; Li, H.; Zhang, Z.; Cheng, W.; Jin, S.; Liu, W. An integrated measurement of the efficiency of China's industrial circular economy and associated influencing factors. *Mathematics* **2020**, *8*, 1610. [CrossRef]

29. Hu, Y.; He, X.; Poustie, M. Can legislation promote a circular economy? A material flow-based evaluation of the circular degree of the Chinese economy. *Sustainability* **2018**, *10*, 990. [CrossRef]
30. Lakatos, E.S.; Yong, G.; Szilagyi, A.; Clinci, D.S.; Georgescu, L.; Iticescu, C.; Cioca, L.-I. Conceptualizing core aspects on circular economy in cities. *Sustainability* **2021**, *13*, 7549. [CrossRef]
31. Ferreira, A.D.C.; Fuso-Nerini, F. A framework for implementing and tracking circular economy in cities: The case of Porto. *Sustainability* **2019**, *11*, 1813. [CrossRef]
32. Meng, X.; Liu, M.; Wang, M.; Wang, J.; Wu, Q. Fuzzy min-max neural network with fuzzy lattice inclusion measure for agricultural circular economy region division in Heilongjiang province in China. *IEEE Access* **2020**, *8*, 36120–36130. [CrossRef]
33. Xue, Y.-N.; Luan, W.-X.; Wang, H.; Yang, Y.-J. Environmental and economic benefits of carbon emission reduction in animal husbandry via the circular economy: Case study of pig farming in Liaoning, China. *J. Clean. Prod.* **2019**, *238*, 117968. [CrossRef]
34. Hofstetter, J.S.; De Marchi, V.; Sarkis, J.; Govindan, K.; Klassen, R.; Ometto, A.R.; Spraul, K.S.; Bocken, N.; Ashton, W.S.; Sharma, S.; et al. From sustainable global value chains to circular economy-different silos, different perspectives, but many opportunities to build bridges. *Circ. Econ. Sustain.* **2021**, *1*, 21–47. [CrossRef]
35. Chen, X.; Liu, X.; Hu, D. Assessment of sustainable development: A case study of Wuhan as a pilot city in China. *Ecol. Indic.* **2015**, *50*, 206–214. [CrossRef]
36. Kazancoglu, I.; Sagnak, M.; Kumar Mangla, S.; Kazancoglu, Y. Circular economy and the policy: A framework for improving the corporate environmental management in supply chains. *Bus. Strateg. Environ.* **2021**, *30*, 590–608. [CrossRef]
37. Hou, D.; Li, G.; Chen, D.; Zhu, B.; Hu, S. Evaluation and analysis on the green development of China's industrial parks using the long-tail effect model. *J. Environ. Manag.* **2019**, *248*, 109288. [CrossRef]
38. da Silva, C.L. Proposal of a dynamic model to evaluate public policies for the circular economy: Scenarios applied to the municipality of Curitiba. *Waste Manag.* **2018**, *78*, 456–466. [CrossRef]
39. Taghipour, A.; Akkalatham, W.; Eaknarajindawat, N.; Stefanakis, A.I. The impact of government policies and steel recycling companies' performance on sustainable management in a circular economy. *Resour. Policy* **2022**, *77*, 102663. [CrossRef]
40. Ehsan, E.; Zainab, K.; Muhammad, Z.-T.; Hongxia, Z.; Xing, L. Extreme weather events risk to crop-production and the adaptation of innovative management strategies to mitigate the risk: A retrospective survey of rural Punjab, Pakistan. *Technovation* **2021**, *117*, 102255. [CrossRef]
41. Kopelman, R.E. Objective feedback. In *Generalizing from Laboratory to Field Settings*; Locke, E.A., Ed.; Lexington Books: Lexington, KY, USA, 1986; pp. 119–145.
42. Kluger, A.N.; DeNisi, A. The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychol. Bull.* **1996**, *119*, 254–284. [CrossRef]
43. Shea, C.M.; Howell, J.M. Charismatic leadership and task feedback: A laboratory study of their effects on self-efficacy and task performance. *Leadersh. Q.* **1999**, *10*, 375–396. [CrossRef]
44. Kuvaas, B. The interactive role of performance appraisal reactions and regular feedback. *J. Manag. Psychol.* **2011**, *26*, 123–137. [CrossRef]
45. The Third Plenary Session of the 18th Central Committee of the CPC. Decision of the Central Committee of the Communist Party of China on Several Major Issues Concerning Comprehensively Deepening the Reform. 2013. Available online: http://www.beijingreview.com.cn/2009news/wenujian/2014-01/24/content_592979.htm (accessed on 1 May 2022).
46. Chen, Y.J.; Li, P.; Lu, Y. Career concerns and multitasking local bureaucrats: Evidence of a target-based performance evaluation system in China. *J. Dev. Econ.* **2018**, *133*, 84–101. [CrossRef]
47. Zhang, P.; Yu, T.; Lu, S.; Huang, R. How does target-based performance evaluation affect the accuracy of energy-saving data: Evidence from China. *Front. Energy Res.* **2021**, *9*, 704317. [CrossRef]
48. Zhang, P.; Wu, J. Performance-based or politic-related decomposition of environmental targets: A multilevel analysis in China. *Sustainability* **2018**, *10*, 3410. [CrossRef]
49. Jia, J.; Huang, Z.; Deng, J.; Hu, F.; Li, L. Government performance evaluation in the context of carbon neutrality: Energy-saving of new residential building projects. *Sustainability* **2022**, *14*, 1274. [CrossRef]
50. Niemann, L.; Hoppe, T. Sustainability reporting by local governments: A magic tool? Lessons on use and usefulness from European pioneers. *Public Manag. Rev.* **2018**, *20*, 201–223. [CrossRef]
51. Jiang, H.; Shao, X.; Zhang, X.; Bao, J. A Study of the Allocation of Carbon Emission Permits among the Provinces of China Based on Fairness and Efficiency. *Sustainability* **2017**, *9*, 2122. [CrossRef]
52. Feng, Z.; Tang, W.; Niu, Z.; Wu, Q. Bi-level allocation of carbon emission permits based on clustering analysis and weighted voting: A case study in China. *Appl. Energy* **2018**, *228*, 1122–1135. [CrossRef]
53. Dong, F.; Long, R.; Yu, B.; Wang, Y.; Li, J.; Wang, Y.; Dai, Y.; Yang, Q.; Chen, H. How can China allocate CO_2 reduction targets at the provincial level considering both equity and efficiency? Evidence from its Copenhagen Accord pledge. *Resour. Conserv. Recycl.* **2018**, *130*, 31–43. [CrossRef]
54. Li, F.; Wu, F.; Chen, L. Harmonious allocation of carbon emission permits based on dynamic multiattribute decision-making method. *J. Clean. Prod.* **2020**, *248*, 119184. [CrossRef]
55. An, Q.; Wen, Y.; Xiong, B.; Yang, M.; Chen, X. Allocation of carbon dioxide emission permits with the minimum cost for Chinese provinces in big data environment. *J. Clean. Prod.* **2017**, *142*, 886–893. [CrossRef]

56. Bian, Y.; Yu, Z.; Zeng, X.; Feng, J.; He, C. Achieving China's Long-Term Carbon Emission Abatement Targets: A Perspective from Regional Disparity. *Sustainability* **2018**, *10*, 4244. [CrossRef]
57. Zhou, J.; Li, Y.; Huo, X.; Xu, X. How to Allocate Carbon Emission Permits Among China's Industrial Sectors Under the Constraint of Carbon Intensity? *Sustainability* **2019**, *11*, 914. [CrossRef]
58. Yu, S.; Awasthi, A.K.; Ma, W.; Wen, M.; Di Sarno, L.; Wen, C.; Hao, J. In support of circular economy to evaluate the effects of policies of construction and demolition waste management in three key cities in Yangtze River Delta. *Sustain. Chem. Pharm.* **2022**, *26*, 100625. [CrossRef]
59. Liu, Z.; Adams, M.; Cote, R.P.; Chen, Q.; Wu, R.; Wen, Z.; Liu, W.; Dong, L. How does circular economy respond to greenhouse gas emissions reduction: An analysis of Chinese plastic recycling industries. *Renew. Sustain. Energy Rev.* **2018**, *91*, 1162–1169. [CrossRef]
60. Fang, K.; Dong, L.; Ren, J.; Zhang, Q.; Han, L.; Fu, H. Carbon footprints of urban transition: Tracking circular economy promotions in Guiyang, China. *Ecol. Model.* **2017**, *365*, 30–44. [CrossRef]
61. Fang, K.; Tang, Y.-Q.; Zhang, Q.-F.; Song, J.-N.; Wen, Q.; Sun, H.-P.; Ji, C.-Y.; Xu, A.-Q. Will China peak its energy-related carbon emissions by 2030? Lessons from 30 Chinese provinces. *Appl. Energy* **2019**, *255*, 113852. [CrossRef]
62. The Central People's Government of the People's Republic of China. Notice of the State Council on Printing and Distributing the National Population Development Plan (2016–2030). 2017. Available online: http://www.gov.cn/zhengce/content/2017-01/25/content_5163309.htm (accessed on 1 May 2022). (In Chinese)
63. World Resources Institute. Climate Watch Data. 2022. Available online: https://www.climatewatchdata.org/ (accessed on 1 May 2022).
64. The State Council Information Office of China. The white paper "China's Energy Development in the New Era". 2020. Available online: http://www.gov.cn/zhengce/2020-12/21/content_5571916.htm (accessed on 1 May 2022).
65. Norton Rose Fulbright. China's Nationwide Carbon Trading Officially Starts at the Shanghai Environment & Energy Exchange on 16 July 2021. 2021. Available online: https://www.nortonrosefulbright.com/en/knowledge/publications/0e75e525/china-nationwide-carbon-trading-officially-starts (accessed on 1 May 2022).
66. Guo, J.; Gu, F.; Liu, Y.; Liang, X.; Mo, J.; Fan, Y. Assessing the impact of ETS trading profit on emission abatements based on firm-level transactions. *Nat. Commun.* **2020**, *11*, 2078. [CrossRef] [PubMed]
67. Yao, S.; Yu, X.; Yan, S.; Wen, S. Heterogeneous emission trading schemes and green innovation. *Energy Policy* **2021**, *155*, 112367. [CrossRef]
68. Zhang, S.; Wang, Y.; Hao, Y.; Liu, Z. Shooting two hawks with one arrow: Could China's emission trading scheme promote green development efficiency and regional carbon equality? *Energy Econ.* **2021**, *101*, 105412. [CrossRef]
69. Zhang, Y.J.; Liang, T.; Jin, Y.L.; Shen, B. The impact of carbon trading on economic output and carbon emissions reduction in China's industrial sectors. *Appl. Energy* **2020**, *260*, 114290. [CrossRef]
70. Lyu, J.; Cao, M.; Wu, K.; Li, H.; Mohi-ud-din, G. Price volatility in the carbon market in China. *J. Clean. Prod.* **2020**, *255*, 120171. [CrossRef]
71. Lin, B.Q.; Huang, C.C. Analysis of emission reduction effects of carbon trading: Market mechanism or government intervention? *Sustain. Prod. Consum.* **2022**, *33*, 28–37. [CrossRef]
72. Dai, X.; Wang, R.X.; Tan, D.H. A study on the impact of smooth domestic circulation on reshaping new competitive advantages—Based on the empirical analysis of the Yangtze River Delta region. *World Econ. Political Forum* **2021**, *6*, 28–54.
73. The People's Government of Zhejiang Province. Zhejiang Province "13th Five-Year Plan" for Energy Conservation and Emission Reduction Comprehensive Work Plan. 2017. Available online: https://www.zj.gov.cn/art/2022/6/30/art_1229019364_2409806.html (accessed on 1 July 2022). (In Chinese)
74. Zhejiang Provincial Development and Reform Commission. Zhejiang Province Further Strengthens Energy "Dual Control" to Promote High-quality Development Implementation Plan (2018–2020). 2018. Available online: https://fzggw.zj.gov.cn/art/2018/10/19/art_1229123351_581187.html (accessed on 1 May 2022). (In Chinese)
75. Zhejiang Provincial Development and Reform Commission. Announcement on the Results of the Evaluation and Assessment of the Responsibility of the Energy "Double Control" Target in Each Districted City in 2016. 2017. Available online: https://fzggw.zj.gov.cn/art/2017/9/18/art_1599544_30219895.html (accessed on 1 May 2022). (In Chinese)
76. Zhejiang Provincial Development and Reform Commission. Announcement on the Results of the Evaluation and Assessment of the Responsibility of the Energy "Double Control" Target in Each Districted City in 2017. 2018. Available online: https://fzggw.zj.gov.cn/art/2018/4/20/art_1599544_30219679.html (accessed on 1 May 2022). (In Chinese)
77. Zhejiang Provincial Development and Reform Commission. Announcement on the Results of the Evaluation and Assessment of the Responsibility of the Energy "Double Control" Target in Each Districted City in 2018. 2019. Available online: https://fzggw.zj.gov.cn/art/2019/5/9/art_1621019_34124914.html (accessed on 1 May 2022). (In Chinese)
78. Zhejiang Provincial Development and Reform Commission. Announcement on the Results of the Evaluation and Assessment of the Responsibility of the Energy "Double Control" Target in Each Districted City in 2019. 2020. Available online: https://fzggw.zj.gov.cn/art/2020/7/31/art_1621019_53836786.html (accessed on 1 August 2022). (In Chinese)
79. Liu, Z.; Yang, Y.; Wu, J. Participatory management, goal ambiguity, and gaming behaviors in performance management: Evidence from township government cadres in mainland China. *Public Perform. Manag. Rev.* **2021**, *44*, 58–80. [CrossRef]

80. Zhu, J.; Fan, C.; Shi, H.; Shi, L. Efforts for a Circular Economy in China: A Comprehensive Review of Policies. *J. Ind. Ecol.* **2019**, *23*, 110–118. [CrossRef]
81. Wang, F.S.; Cai, W.X.; Elahi, E. Do Green Finance and Environmental Regulation Play a Crucial Role in the Reduction of CO_2 Emissions? An Empirical Analysis of 126 Chinese Cities. *Sustainability* **2021**, *13*, 13014. [CrossRef]
82. Laura, F.S.; Michael, P. Risk management: The reinvention of internal control and the changing role of internal audit. *Account. Audit. Account. J.* **2003**, *16*, 640–661. [CrossRef]
83. Neu, D.; Everett, J.; Rahaman, A.S. Preventing corruption within government procurement: Constructing the disciplined and ethical subject. *Crit. Perspect. Account.* **2015**, *28*, 49–61. [CrossRef]
84. Roberts, N.; Candreva, P.J. Controlling internal controls. *Public Adm. Rev.* **2006**, *66*, 463–465. [CrossRef]
85. Behn, R.D. Why measure performance? Different purposes require different measures. *Public Adm. Rev.* **2003**, *63*, 586–606. [CrossRef]
86. The General Office of the Central Committee of the Communist Party of China. Regulations on the Appraisal of Leading Cadres of the Party and Government. 2019. Available online: http://www.gov.cn/zhengce/2019-04/21/content_5384955.htm (accessed on 1 May 2022).
87. Song, J.; Chen, R.; Ma, X. Collaborative Allocation of Energy Consumption, Air Pollutants and CO_2 Emissions in China. *Sustainability* **2021**, *13*, 9443. [CrossRef]
88. Peng, B.H.; Chen, H.; Elahi, E.; Wei, G. Study on the spatial differentiation of environmental governance performance of Yangtze river urban agglomeration in Jiangsu province of China. *Land Use Policy* **2020**, *99*, 105063. [CrossRef]
89. Zhang, M.; Li, B.; Yin, S. Is technological innovation effective for energy saving and carbon emissions reduction? Evidence from China. *IEEE Access* **2020**, *8*, 83524–83537. [CrossRef]
90. Elahi, E.; Khalid, Z.; Zhang, Z.X. Understanding farmers' intention and willingness to install renewable energy technology: A solution to reduce the environmental emissions of agriculture. *Appl. Energy* **2022**, *309*, 118459. [CrossRef]
91. Wei, J.; Chen, H.; Long, R.; Zhang, L.; Feng, Q. Maturity of residents' low-carbon consumption and information intervention policy. *J. Clean. Prod.* **2020**, *277*, 124080. [CrossRef]
92. Hangzhou Bureau of Statistics. "1+6" Industrial Clusters. 2022. Available online: http://tjj.hangzhou.gov.cn/art/2022/2/11/art_1229453450_3842681.html (accessed on 1 May 2022).
93. Wu, Z.; Focus on the Leading Industries and Strive to Achieve New Breakthroughs in Attracting Big and Attracting Strong. Jinhua Daily 2022. Available online: http://www.jinhua.gov.cn/art/2022/2/16/art_1229159979_60231656.html (accessed on 1 May 2022).
94. Zhoushan Bureau of Statistics. Statistical Communiqué on the National Economic and Social Development of Zhoushan City in 2021. 2022. Available online: http://zstj.zhoushan.gov.cn/art/2022/3/21/art_1229339440_3684475.html (accessed on 1 May 2022).
95. Zhang, F.; Fang, H.; Wang, X. Impact of Carbon Prices on Corporate Value: The Case of China's Thermal Listed Enterprises. *Sustainability* **2018**, *10*, 3328. [CrossRef]
96. Lv, M.; Bai, M. Evaluation of China's carbon emission trading policy from corporate innovation. *Financ. Res. Lett.* **2021**, *39*, 101565. [CrossRef]
97. Wang, S.; Wan, L.; Li, T.; Luo, B.; Wang, C. Exploring the effect of cap-and-trade mechanism on firm's production planning and emission reduction strategy. *J. Clean. Prod.* **2018**, *172*, 591–601. [CrossRef]
98. Zhang, H.; Zhang, B. The unintended impact of carbon trading of China's power sector. *Energy Policy* **2020**, *147*, 111876. [CrossRef]
99. Wu, Q.; Tambunlertchai, K.; Pornchaiwiseskul, P. Examining the Impact and Influencing Channels of Carbon Emission Trading Pilot Markets in China. *Sustainability* **2021**, *13*, 5664. [CrossRef]
100. Doda, B. How to price carbon in good times . . . and bad! *Wiley Interdiscip. Rev. Clim. Chang* **2016**, *7*, 135–144. [CrossRef]
101. Feng, T.-T.; Li, R.; Zhang, H.-M.; Gong, X.-L.; Yang, Y.-S. Induction mechanism and optimization of tradable green certificates and carbon emission trading acting on electricity market in China. *Resour. Conserv. Recycl.* **2021**, *169*, 105487. [CrossRef]
102. Zhang, J.; Liu, Y.; Chang, Y.; Zhang, L. Industrial eco-efficiency in China: A provincial quantification using three-stage data envelopment analysis. *J. Clean. Prod.* **2017**, *143*, 238–249. [CrossRef]
103. Lo, A.-Y. Challenges to the development of carbon markets in China. *Clim. Policy* **2016**, *16*, 109–124. [CrossRef]
104. Sumner, J.; Bird, L.; Dobos, H. Carbon taxes: A review of experience and policy design considerations. *Clim. Policy* **2011**, *11*, 922–943. [CrossRef]
105. Ma, N.; Yin, G.W.; Li, H.J.; Sun, W.L.; Wang, Z.; Liu, G.; Xie, D. The optimal industrial carbon tax for China under carbon intensity constraints: A dynamic input-output optimization model. *Environ. Sci. Pollut. Res.* **2022**, *29*, 53191–53211. [CrossRef]
106. Liu, W.J.; Li, Y.Y.; Liu, T.T.; Liu, M.; Wei, H. How to Promote Low-Carbon Economic Development? A Comprehensive Assessment of Carbon Tax Policy in China. *Int. J. Environ. Res. Public Health* **2021**, *18*, 10699. [CrossRef] [PubMed]
107. Pereira, A.M.; Pereira, R.M.; Rodrigues, P.G. A new carbon tax in Portugal: A missed opportunity to achieve the triple dividend? *Energy Policy* **2016**, *93*, 110–118. [CrossRef]
108. Kaplan, R.S.; Norton, D.P. The Balanced Scorecard—Measures That Drive Performance. *Harv. Bus. Rev.* **1992**, *70*, 71–79.
109. Kaplan, R.S.; Norton, D.P. *The Balanced Scorecard: Translating Strategy into Action*; Harvard Business School Press: Boston, MA, USA, 1996.

110. Bouckaert, G.; Van de Walle, S. Comparing measures of citizen trust and user satisfaction as indicators of 'good governance': Difficulties in linking trust and satisfaction indicators. *Int. Rev. Adm. Sci.* **2003**, *69*, 329–343. [CrossRef]
111. Kaplan, R.S.; Norton, D.P. How to implement a new strategy without disrupting your organization. *Harv. Bus. Rev.* **2006**, *84*, 100–109. [CrossRef] [PubMed]
112. Oscar Nigro, H.; Gonzalez Cisaro, S.E. The citizen satisfaction index: Adapting the model in Argentine cities. *Cities* **2016**, *56*, 85–90. [CrossRef]
113. Meng, F.; Guo, J.; Guo, Z.; Lee, J.C.K.; Liu, G.; Wang, N. Urban ecological transition: The practice of ecological civilization construction in China. *Sci. Total Environ.* **2021**, *755*, 142633. [CrossRef]
114. Wu, J.C.T.; Tsai, H.T.; Shih, M.H.; Fu, H.H. Government performance evaluation using a balanced scorecard with a fuzzy linguistic scale. *Serv. Ind. J.* **2010**, *30*, 449–462. [CrossRef]
115. Kroll, A.; Moynihan, D.P. Tools of control? Comparing congressional and presidential performance management reforms. *Public Manag. Rev.* **2021**, *81*, 599–609. [CrossRef]
116. Yu, W.; Ma, L. External government performance evaluation in China: Evaluating the evaluations. *Public Perform. Manag. Rev.* **2015**, *39*, 144–171. [CrossRef]
117. Lu, H.; Elahi, E.; Sun, Z. Empirical Decomposition and Forecast of Carbon Neutrality for High-End Equipment Manufacturing Industries. *Front. Environ. Sci.* **2022**, *10*, 1–10. [CrossRef]