

四川省图书出版重点规划项目
西南财经大学“中央高校基本科研业务费”后期资助项目资助
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中国低碳经济区域 推进机制研究

Study On the Regional Promotion Mechanism of
China's Low-carbon Economy



黄世坤 著

本书在文献回顾和评述的基础上

深入分析了温室气体物品属性及区域低碳发展的内在矛盾,

构建和论证了从区域层面推进中国低碳经济的总体方案。

针对低碳实践中的种种问题,

提出了一种新的节能减排区域责任分解方法,

并从区域视角研究了如何完善我国低碳政策机制、低碳市场机制

和碳减排区域互助合作机制等重大现实问题。



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摘要

应对气候变化是我们这个时代人类面临的重大挑战。中国作为发展中国家，已经成为世界上最大的温室气体排放国，正面临着越来越大的国际减排压力。中国作为区域经济发展很不平衡的大国，其经济向低碳转型终归要靠各个区域的自觉行动。探寻中国低碳经济区域推进机制，不仅是中国经济向低碳转型能否成功的关键，并且将丰富中国发展模式的内容，还对与中国有相似国情的发展中国家有借鉴作用。因此，探寻这一机制具有重要的理论与现实意义。

中国低碳经济区域推进机制的逻辑前提是要切实弄清中国在区域层面促进低碳发展到底面临着哪些重大难题。温室气体具有引发温室效应、无毒无色无味、空间流动性和较长存留性等物理特性，同时具有经济伴生性、易外部化、非竞争性和非排他性等经济特性。温室气体的这些特性产生了温室气体排放与区域经济发展的三重关系：因外部性产生的区域经济高碳化趋势关系、碳排放随经济发展呈现出的历时动态变动关系、碳排放随区域异质性呈现出空间分布趋异关系。“三重关系”产生了“三大矛盾”：低碳经济与地区本位利益的矛盾、低碳经济与区域平衡发展的矛盾、低碳经济与区域优化发展的矛盾。由此，中国从区域层面推进低碳经济发展面临着的重大难题主要是：在“经济人”假设下，各地区缺乏单方面主动碳减排的内在激励；存在低碳经济的地区悖论，即越是鼓励落后地区加速发展，越不利于我国碳减排总体目标的实现；低碳发展可能与发挥区域相对优势相冲突。

面对“三大矛盾”带来的多重重大难题，我国应当怎样从区域层面推进低碳经济发展？本书的根本主张是“统筹协进”的总方案，基本思路是将“统筹兼顾”作为处理中国经济向低碳转型中中央与地方、上级与下级、政府与辖区企业之间“纵向”关系的根本方法，将“协作共进”作为处理向低碳经济转型中地方与地方、各区域微观经济主体之间“横向”关系的根本途径。通过“统筹兼顾”，将区域低碳发展、区域平衡发展和区域优化发展有机结

合,跳出仅仅从低碳要求的视角发展低碳经济的局限思维,科学合理地进行碳排放权的区域分解,综合运用各种政策手段,充分形成区域层面推进低碳经济的外在压力和内在激励。通过“协作共进”,更进一步实现碳排放权资源的合理有效配置,促进区域之间的互助合作,解决低碳经济的区域悖论,并在碳排放权约束下规范推进区际产业转移,促进先进地区与落后地区共同的低碳发展。具体来说,“统筹协调”总方案主要包括五个方面的内容:碳减排区域责任体系、区域低碳政策体系、区际碳市场体系、碳减排区域互助合作体系、碳约束下产业区际转移体系。五大方面内容体现了五大机制的作用,即责任机制、政策机制、市场机制、合作机制和碳约束下的产业转移机制。前两大机制属于纵向“统筹”方面的制度创新,后三大机制属于区际横向“协进”方面的制度创新。

“统筹协调”总方案的理论依据主要有三个:马克思的产权理论、科学发展观和规制经济学理论。根据马克思产权理论,产权作为一种法权,属于上层建筑的内容,是一种反映着经济关系的意志关系。马克思关于法权关系、经济关系和意志关系三者之间本质联系的科学阐述,为我们科学认识碳排放权奠定了坚实的理论基础。我国是社会主义国家,有限的碳排放空间属于全社会的公共资源,属于公共产权,完全可以通过改革公共产权的具体实现形式解决碳排放的外部性难题。碳排放权的公共产权性质决定了“统筹”机制之必要,碳排放权的区域分解亦因此不应局限于局部利益或部门利益,而是要权衡统筹我国社会发展的各种合理目标。从区域的角度来说,也就必然要求将低碳发展与区域平衡发展和区域优化发展的要求统筹考虑。同时,根据马克思的经济学思想,“减排”作为一种产品,不仅具有使用价值,而且具有价值,在“减排”收益能够完全归于减排者的条件下,建立区际碳排放权的交易市场,不仅能够实现减排成本最小化,而且可以通过追逐“减排”产品的“超额利润”而促进技术进步,因而必然产生区际“协进”的需要。

低碳经济不是为低碳而低碳,而是要在低碳约束下推动我国经济发展,因此,亦要从科学发展的视角探索中国低碳经济区域推进机制问题。“统筹协调”总方案及其具体实现机制同样是运用科学发展观的理论结果。本书认为,科学发展观是以全面、协调、可持续为基本要求的发展观,它既包含可持续发展思想但又超越可持续发展思想,同时兼具区域优化发展思想和平衡发展思想,能跳出仅仅从低碳要求出发推动低碳发展的狭隘视野。科学发展观以统筹兼顾为根本方法,能够帮助我们在分清主要矛盾和次要矛盾的基础上,明确对策的主要方向、解决区域施政者的低碳行政责任等重要问题。科学发展观强调

“以人为本”，亦为我国破解从区域层面推进低碳经济面临的“三大矛盾”提供了正确的指导原则。科学发展观以社会主义市场经济体制为配置资源的主体机制，也可以实现在既定碳排放权利结构下的减排成本最小化。政府规制经济学理论则为具体的制度变革指示了方向。

就“统筹协进”总方案的现实依据来讲，我国民主集中制的政治制度，已经初步形成的中国特色发展模式，低碳经济发展过程初步暴露的各种问题等，都决定了“统筹协进”总方案的必要。并且，它还可以合理抑制我国的区际过度竞争。

根据低碳经济区域推进机制“统筹协进”总方案应由五大机制具体组成的构想，本书分别各列一章论述了这五大机制的构建和完善。

低碳经济区域推进机制主要内容之一是构建和完善碳减排的区域责任机制。我们基于马克思产权理论，以及借鉴科斯产权理论中一些具有科学性的内容，结合我国国情，提出完善当前中国碳减排区域责任机制主要包括节能减排责任区域分解体系、区域目标责任考核体系和降低政府的责任界定成本三个方面。其中，在节能减排责任区域分解体系方面，本书认为，尽管我国“十二五”的分解方案比起“十一五”的分解方案有了明显进步，但仍然存在划分比较粗略、缺乏良好的经济学理论基础等重大缺陷。科学的办法应当是首先以各地区承担的节能减排指标对各地区经济发展速度呈“中性”影响为基础，再根据其他原则进行相应调整。

使节能减排责任分解对于地区经济增长呈中性，也就是要实现各地区单位生产总值能源消耗量的降低幅度导致地区生产总值同比例增减。据此，本书提出了相应的计算方法，基本思路是：第一步，以第 $t-1$ 期的历史数据推算第 t 期各地边际节能降耗成本。第二步，计算第 t 期的各地相对减排比例，即根据各地的边际节能降耗成本，计算假如使各地生产总值均下降1个百分点时各地的节能降耗幅度。由于各地各不相同的节能降耗幅度事实上又反映了对经济增长呈“中性”情景下各地之间节能降耗的相对关系，故又称为相对减排比例。第三步，参照国家“十二五”规划的总体目标，根据相对减排比例求出对地方经济增长呈“中性”影响的各区域节能减排指标。在根据其他原则作相应调整时，根据数据的可得性，我们主要考虑了区域平衡发展因素。我们的计算思路是：第一步，根据区域平衡发展要求设定各地生产总值增长率的不同情景。第二步，根据不同情景下各地的生产总值增长率，可以计算出需要通过节能降耗“倒逼”各地经济增长加快或者放慢的百分点，进而可以计算出各地区“十二五”期间应该承担的额外的节能降耗指标。

另外，在构建目标责任考核体系方面，本书提出了构建节能减排层级负责制度、健全节能减排统计与监测体系、强化信息公开制度、完善考核制度等具体建议。在降低政府产权界定成本方面，本书提出了规范政府行为以使政府避免被“俘获”、消除信息不对称、降低行政成本等政策建议。

低碳经济区域推进机制的主要内容之二是构建和完善促进低碳经济区域推进的政策机制。我们根据已有研究梳理了政府规制的一般内容，总结和分析了我国低碳政策的现状与问题，提出了我国事实上已经开始形成一套初见成效的低碳政策体系，包括：低碳价格政策、低碳财税政策、低碳进出口政策、低碳投资政策、低碳购销政策、低碳产业政策、低碳技术政策、低碳公共工程、低碳信息政策、低碳管理规制、对政府的规制、对低碳规制的规制、低碳人才政策、“拉闸限电”、特许经营制度、创设中国清洁发展基金，等等。但也存在明显的问题，主要包括：激励约束机制不健全、能力建设不足、对地方政府的规制和对规制的规制有待加强、存在重要的政策偏误，等等。进而，本书提出了相关政策建议，包括：完善碳税机制、改革能源资源定价机制、完善其他激励约束机制、加强对地方政府的规制、提高政策的区域辨识度等。

低碳经济区域推进机制的主要内容之三是构建和完善区域推进的市场机制。我们运用碳排放权交易供给需求曲线作为分析工具，得出了降低交易成本是构建和完善碳市场体系的中心目标的结论。本书以清洁发展机制为例，既从会计学角度分析了碳市场交易成本的具体构成，又从经济学角度分析了碳市场交易费用的构成，将它区分为信息成本、常规成本和风险成本三大部分。再借鉴威廉姆森等人的理论，具体分析了产生碳交易成本的根本原因，由此，提出了构建和完善区际碳市场体系的政策建议，主要包括：合理配置碳市场网点、大力发展第三方机构、推动标准化运行、提升政府管理效能、完善法律保障体系、构建碳交易保险体制，等等。

低碳经济区域推进机制的主要内容之四是构建碳减排区域互助合作机制，用以缓解和解决低碳经济的区域悖论。原因在于：第一，“十二五”相对落后的西部地区的发展速度将可能仍比发达地区更高；第二，碳生产率更高的先进地区有更严格的节能减排任务，因此，我们有理由相信“十二五”时期的低碳经济区域悖论问题可能会更加严重，这凸显了碳减排区域互助合作机制的紧迫性；第三，沿海发达地区与落后地区客观上存在双方互利共赢、合作减排的良好机会；第四，双方具有对于邓小平“两个大局”思想的共同理论认同；第五，我国容易发展出区际互助合作的宪政约束，这凸显了碳减排区域互助合作的可能性。本书基于对我国区域互助合作的历史进程的考察，发现我国仍存

在阻碍区域合作的制度性障碍、区域合作的组织与手段不完备、区域经济合作法制不健全等问题。进而，本书进行了低碳经济区域互助合作机制设计，主要有跨期交换机制和利益共享机制。在跨期交换机制中，主要有“包省援助”、“多交利税，转移支付”、“技术援助”等手段。但是，这些手段要随着低碳发展的要求与时俱进，比如在“包省援助”方面，本书提出了将碳减排纳入“对口支援”范畴、“对口支援”的受援地要大大扩展、中央转移支付部分设立技术改造基金等政策建议。在利益共享机制方面，本书提出了区际行业合作减排计划，并设计了其实施步骤和激励机制。

低碳经济区域推进机制的主要内容之五是根据低碳发展要求完善区际产业转移机制。本书在综述产业转移相关理论、比较产业转移不同机制的基础上，结合当前实际情况，得出了我国区际产业转移浪潮正在到来的判断。在此基础上，我们研究了区际产业转移演化为碳排放转移的现实可能性及其危害。在对2009年广东省的个案研究中我们发现：广东省“非金属矿物制品业”等12个高能耗、高排放行业中，就有“黑色金属冶炼及压延加工业”、“造纸及纸制品业”等9个效益较差行业，除了“电力、热力的生产和供应业”及“水的生产和供应业”两个行业属于当地生产生活必需而无法转移外，竟有多达7个行业既有内在转移激励，又面临外在转移政策压力。7个行业的碳排放总量占广东全省碳排放总量的40%。如何在低碳发展背景下有效规范区际产业转移？本书提出了改进产业承接壁垒以杜绝违标产业移入、扩大区外引资的乘数效应以“摊薄”转入产业碳排放强度、加强引入产业入园建设以实现管理节能、构建碳转移的区际补偿机制四大政策建议。

本书可能的创新主要体现在：第一，明确提出中国区域层面推进低碳经济转型面临着“三大矛盾”，跳出了仅仅就低碳要求谈论低碳经济的狭隘视野。第二，面对“三大矛盾”的严峻挑战，提出了中国低碳经济区域推进机制的“统筹协进”总方案。第三，根据中国区域层面推进低碳经济转型面临的具体问题，提出了一种新的节能减排责任区域分解方法。第四，从区域的视角研究了如何进一步完善我国的低碳政策体系。第五，对区际碳市场体系的构建提出了自己的建议。第六，明确提出了碳减排区域互助合作机制，并进行了相关机制设计。然而，本书亦存在尚未能将能源资源空间分布差异因素纳入节能降耗指标区域分解等若干明显的缺陷。

关键词：中国 低碳经济 区域 推进 机制

Abstract

Tackling climate change is a great challenge of our times for humans. As a developing country, China has become the world's largest emitter of greenhouse gases, facing growing international pressures to reduce emissions. China, as a great country of imbalance in development of regional economy, the low carbon transformation of its economy will eventually be the implement of each region's conscious actions. Exploring the regional promotion mechanism of China's low - carbon economy is not only the key to success of the Chinese economy of low carbon transition, but also enriching the contents of Chinese development mode. Furthermore, the developing countries with similar Chinese national conditions draw lessons from it, which has great influences on them.

The logic premise of the regional promotion mechanism of China's low - carbon economy is to effectively ascertain what major problems at the regional level confront China to promote low - carbon development. Greenhouse gases possess physical characteristics like causing the greenhouse effect, non - toxic colorlessness and odourlessness, and the spatial mobility and longer retention. At the same time, it has economic characteristics which are economically concomitant, easy external, non - competitive and non - exclusive. As a result, there exists the triple relation between greenhouse gas emissions and regional economic development. That is the trend of high harmonization in regional economy due to externality, the diachronic dynamic change relation of carbon emissions with economic development, and the spatial distribution divergence relation of carbon emissions with regional heterogeneity. The "triple relation" brings about the major three contradictions: the low - carbon economy & the regional localized interest, the low - carbon economy & the balanced regional development and the low - carbon economy & the regional optimization development. Thus, what major

problems confronts China to promote low-carbon development at the regional level is mainly that each region lacks unilateral active intrinsic incentives in carbon emission reduction on the hypothesis of “economic man”. There exists the regional paradox of the low-carbon, which means the more encouraged to accelerate the development of backward areas, less conducive to the overall goals of China’s carbon emissions reduction, and low carbon development may be in conflicts with playing regional comparative advantages.

Confronted with multiple major problems brought by the three major contradictions, how should China promote the development of low carbon economy from the regional level? The fundamental proposition of this paper is the total scheme of “development with overall plan”. The basic idea is to regard “taking all factors into consideration” as the essential method to deal with vertical relationships between the central and the local, the superior and the subordinate, governments and local enterprises in the process of the transition in Chinese low-carbon economy and treat “development with coordination” as the fundamental way to cope with horizontal relationships between the locals and the locals, each regions’ main bodies of microcosmic economy. Through “taking all factors into consideration”, we can make a coordinate combination of the regional low-carbon development, regional balanced development and the regional optimization development, get out of the narrow perspective of the low-carbon requirements to develop low-carbon economy, scientifically and rationally carry out the domain decomposition of carbon emission rights, comprehensively use various means of policy and fully form the regional level to promote the external pressure and internal motivation of low-carbon economy. By “development with coordination”, we can further achieve the reasonable and effective allocation of resources in carbon emission reduction rights, promote regional mutual cooperations, resolve the regional paradox of low-carbon economy, orderly propel inter-regional industry transfer in restraint of carbon and facilitate common low-carbon development in advanced area and backward area. Specifically, the total scheme of “Development with overall plan” mainly include five aspects: the regional responsibility system of carbon emission reduction, the regional low-carbon policy system, the inter-regional carbon market system, the regional mutual cooperation system of carbon emission reduction and the inter-regional industry transfer system in restraint of carbon. The five aspects are the

representation of the five mechanisms which include responsibility mechanism, policy mechanism, market mechanism, cooperation mechanism and the industrial transfer mechanism in restraint of carbon. The first two mechanisms are the system innovation on “overall plan” in vertical aspect. The last three mechanisms are the system innovation on “development with coordination” in inter – regional aspect.

The theoretical basis of the total scheme of “development with overall plan” include three aspects: the Marx’s theory of property rights, the scientific outlook on development and the theory of economics of regulation. According to Marx’s Theory of Property Rights, property rights, as a legal right, belong to the superstructure and is a reflection of ideological relations of economic relations. Marx’s scientific explanation of the essential relationships of the legal rights relations, economic relations and will relations lays a solid theoretical foundation for our scientific understanding of the rights of carbon emission reductions. China is a socialist country, the limited space of carbon emission reduction belongs to all social public resources and public properties. It can solve the external problem of carbon emissions through specific implementation forms of reforming public properties. The public properties of carbon emission rights shows the necessity of the mechanism of “overall planning” and the domain decomposition of carbon emission rights should not be confined to local interests or departmental interests, but coordinate and weigh all kinds of reasonable targets in our social development. From a regional point of view, there is an inevitable requirement to coordinate and consider the requirements of low carbon development & regional balanced development and low carbon development & the regional optimization development. Meanwhile, according to Marx’s idea of economics, “emission reduction” as a product, not only possesses use value, but also the value. When the interest of emission reduction can be entirely attributed to organizations and people who propose emission reduction. The establishment of inter – regional carbon emissions market trading not only can minimize the costs of emission reduction, but also can promote technical progress by the pursuit of the “super – profit” on products of “emission reduction”, thus inevitably producing the need for the inter – regional “development with coordination”.

Low – carbon economy is not low – carbon for its own sake, but can promote our economic development in restraint of low – carbon. We should also explore the regional promotion mechanism from the perspective of scientific development. The total scheme of “development with overall plan” and its implementation mechanism are the

results of using the same theory of scientific development. From the paper's thought, the scientific development is a comprehensive, balanced, sustainable development view as the fundamental requirements. It contains the concept of sustainable development but beyond the theory of sustainable development and at the same time has the regional optimization development and balanced development. So it can escape the narrow and limited views of promoting low-carbon development only from the requirements of low-carbon. Regarding the taking all factors into consideration as the fundamental development way, the scientific development can help us make clear the main direction of strategies and solve the low-carbon administrative responsibility of regional policy makers on the basis of distinguishing the principal contradiction and the secondary contradiction. The scientific development emphasizes "putting people first" and also provides us with a correct guiding principles of cracking the three contradictions by promoting low-carbon economy from the regional level. The scientific development bases on the system of socialist market economy as the main mechanism for allocating resources and also can minimize the cost of reducing emissions in the structure of established carbon emission rights. The government regulation theory indicate the direction for the concrete system reformation.

In terms of the realistic basis of The total scheme of "development with overall plan", the Chinese centralized national structure, the initially formed Chinese model of development and a variety of problems initially revealed in the development process of low-carbon economy determine the need for the total scheme of "development with overall plan", and it can be rationally inhibit our country's inter-regional excessive competition.

Constructing and perfecting theregional responsibility mechanism of carbon emissions reduction is the first major content of total scheme of "development with overall plan". Based on Property Rights Theory proposed by Marx and China's national conditions, learned from some scientific contents of the Coase Property Rights Theory, we propose and perfect the current responsibility mechanism of China's carbon emission rights, including energy conservation and emission reduction responsibility domain decomposition system, regional goal responsibility evaluation system and reduction of governmental defined responsibility cost. Among them, in terms of energy conservation and emission reduction responsibility domain decomposition system, although more obvious progress has been witnessed in the "Twelfth Five-Year Plan" than that of "E-

leventh Five - Year Plan", there are great failures such as sketchy division and absence of favorable economic theory basis. The scientific method should be, firstly, based on the neutral influence that the index of energy conservation and emission reduction of each province have on its own economic development pace, and then reduced correspondently in accordance with other principles.

The neutral influence that the index of energy conservation and emission reduction of each province have on its own economic development pace which means reaching the goal that reduction of energy consumption of per unit GDP in each region will lead to increase or decrease of GDP in the same proportion is exactly implication of "equal marginal cost" against political competition centered on increase rate of GDP. Hereby, this paper puts forward corresponding calculation method, whose basic idea firstly goes to inferring marginal cost of energy consumption in various regions in the t th phase from the historical data in the $t - 1$ th phase, and secondly goes to calculating relative reduction ratio in all regions, which means calculating all energy saving and consumption reduction if GDP in all regions were decreased by 1% based on marginal cost of energy consumption. Relative reduction of emission ratio is defined in such a way because different energy - saving and consumption reduction goals reflect actually relative tie among various regions under the condition that economic development is neutral. The third part of the basic idea requires calculating the energy - saving and consumption - reduction index that have neutral influence on local economic development in accordance with relative reduction ratio with reference to the overall goal of the "Twelfth Five - Year Plan". When correspondent adjustment in accordance with other principles is made, we mainly take balanced regional development into consideration according to the accessible data. The calculating ideas proposed by us firstly goes to setting different situations of each region's GDP growth rate according to the requirements of regional balanced development, and secondly goes to calculating the percentages of each region's economic growth or economic slowdown through "forced" energy saving and consumption reducing and then calculating extra energy saving and consumption reducing targets undertook by each province in the "The Twelfth Five - Year Plan" period according to each region's GDP growth rate under condition of different situations.

In addition, in terms of construction of target responsibility assessment system, some suggestions are proposed in this paper like constructing of the level responsibility

system of energy saving and emissions reduction, improving the statistics and monitoring system of energy saving and emissions reduction, strengthening the information disclosure system and perfecting the assessment system. In terms of reducing government's costs on defined property rights, some policy suggestions are put forward in this paper like regulating the government acts to enable the government to avoid "capture", eliminating asymmetric information, reducing administrative costs.

Constructing and perfecting the promotion of the policy systems on regional low-carbon economic development is the second major content of total scheme of "development with overall plan". Based on the existing research, we combed the general government regulation, summarize and analyse the current situations and problems of China's low-carbon policy. And it puts forward that China in fact, already has begun to form a set of initial success to low-carbon policy system, including low-carbon pricing policy, low-carbon fiscal policy, low-carbon import and export policy, low-carbon investment policy, low-carbon procurement policy, low-carbon industrial policy, low-carbon technology policy, low-carbon public works, low-carbon information policy, low-carbon management regulation, regulation for government, regulation of low-carbon regulation, low-carbon personnel policy, "blackouts", the franchise system, the creation of Chinese Clean Development Fund. But there still exists obvious problems including imperfect incentive and restraint mechanisms, insufficient capacity building, further improvement in local government regulation and the regulation of regulation and important policy bias. Furthermore, the relevant policy recommendations are proposed in this paper including perfecting the mechanism of carbon tax, reforming the pricing mechanism of energy resources, improving some other incentives and restraint mechanisms, strengthening local government regulation, improving policy of regional recognition.

The third main content of total scheme of "development with overall plan" is to construct and perfect inter-regional carbon market system and promote development of regional low-carbon economy through market mechanisms. We use the supply and demand curves of carbon emissions trading as an analytical tool to reduce transaction costs to build and improve the central target of the carbon market system. The construction of carbon market transaction costs from the perspective of accounting is analysed in this paper taking the clean development mechanism as an example. The com-

position of carbon market transaction expenses is analysed from the economics point of view, which is divided into three parts: information costs, general costs and risk costs. And then learning from the theory of Williamson, the root causes of the costs of carbon trading are analysed in detail. As a result, some policy recommendations are proposed to construct and perfect regional carbon market system including the rational allocation of carbon market outlets, vigorously developing the third - party institutions, promoting standardization operation, enhancing the effectiveness of government management, perfecting the system of legal protection and building the insurance system of carbon trading.

The fourth main content of total scheme of “development with overall plan” is to construct the regional mutual cooperation mechanism of carbon emission reduction to alleviate and resolve the regional paradox of low - carbon economy. There exist reasons for this. First, the pace of development in relatively backward western regions may still be higher than in developed regions in the “Twelfth Five - Year Plan” period. Advanced regions of higher carbon productivity have more stringent energy saving tasks, and there are reasons for us to believe that the regional paradox of low - carbon economy may be more serious in the “Twelfth Five - Year Plan” period, highlighting the urgency of the regional mutual cooperation mechanism of carbon emission reduction. Moreover, there are also other reasons. First, there exists good opportunities of mutual benefit and cooperative emission reduction for developed coastal areas and backward areas. Second, there exists common theoretical identity on the theory of Deng Xiaoping’s “Two Overall Situations” for developed coastal areas and backward areas. Third, China is prone to develop the constitutional constraints of inter - regional mutual cooperation, which highlights the possibility of regional mutual cooperation of carbon emissions reduction. Based on the investigation of the historical process of China’s regional mutual cooperation, there still exists institutional barriers hindering regional mutual cooperation, the incomplete regional cooperation’s organization and means and the imperfect regional economic cooperation’s legal system. Furthermore, it proposes in this paper the mechanism design of regional mutual cooperation on the condition of low - carbon economy, including the intertemporal exchange mechanism and benefit - sharing mechanisms. In the intertemporal exchange mechanism, there are the main means like the provincial aid package, paying more profits and taxes, transferring payments and technical assistance. However, these means must be ad-

vanced with the times along with the requirements of the low-carbon development, for example, in the provincial aid package, some policy recommendations are proposed in the paper, which include emission reductions integrated into policy of counterpart support, the significant expansion of counterpart support's recipient, the establishment of the technical improvement fund for central transfer payment. For the benefit-sharing mechanisms, it proposes in this paper the inter-regional industry plans to reduce emissions, and the design of implementation steps and incentives.

Perfecting the inter-regional industrial transfer mechanism in restraint of carbon is the fifth main content of total scheme of "development with overall plan". Based on the review of industrial transfer theory, summary of different mechanisms of industrial transfer and the actual situation, we can judge the coming of China's inter-regional industrial transfer wave. On this basis, we focus on the real possibility of carbon emissions' transfer in the inter-regional industrial transfer. For the places of industrial transfer, we may probably first transfer out the industries that have total energy consumption, high energy consumption per unit GDP but low profitability and belong to the labor-intensive industry. Accordingly, we have developed a set of industrial ways to recognize industries that are energy intensive, have high emissions in advanced areas subject to transfer. In the case study of Guangdong Province in 2009, we found that in the twelve industries that are energy intensive, have high emissions like the non-metallic mineral industry, ferrous metal smelting and rolling processing industry, and oil processing in Guangdong Province, there exists eight poor efficiency industries including ferrous metal smelting and rolling processing industry and papering & paper products industry. But there are only two industries like the electricity, heat production and supply industry, the water production and supply industry, which are the necessity of the local people for us unable to transfer. Moreover, from the product sales rate, all these industries possess excess production capacity. In addition to the ferrous metals processing and rolling processing industry, other industries are typical labor-intensive industries. Therefore, we can confirm that seven industries are prone to highly transfer from the twelve industries that are energy intensive, have high emissions in Guangdong Province. How could we effectively regulate the inter-regional industrial transfer on the condition of low-carbon development? Four major policy recommendations are put forward in this paper, which include improving indus-

try undertaking barriers, expanding investment multiplier effect “diluted” transferred to the strength of industrial carbon emissions, strengthening constructions of industrial garden to achieve the management of energy – saving, and building the carbon transfer compensation mechanism.

Possible innovation are presented in this paper. First, it puts forward the three contradictions faced by the transformation of China’s low – carbon economy at the regional level. Second, it proposes total scheme of “development with overall plan” in regional promotions of China’s low – carbon economy. Third, based on the concrete problems faced by the transformation of China’s low – carbon economy, it puts forward a new energy saving responsibility domain decomposition method. Fourth, from the perspective of region, it proposes the direction for perfecting low – carbon policy system. Fifth, it also explicitly puts forward the regional mutual cooperation mechanism for carbon emission reduction, and corresponding policy recommendations. In the meantime, in this paper, there also exists the evaluation studies on regional promotion practice, and a number of obvious flaws, which fail to include the factor of energy resources spatial distribution differences to the domain decomposition of energy saving targets.

Key Words: China; Low – carbon economy; Regional; Promotion; Mechanism