

碳排放交易对实现我国“十二五”减排目标的成本节约效应研究

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The Cost Saving Effect of Carbon Markets in China for Achieving the Reduction Targets in the “12th Five-Year Plan”

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摘要 本文针对实现我国“十二五”期间减排目标的现实背景,构建了一个省际碳排放权交易模型,重点探讨了在实现各省减排目标的过程中,碳排放权交易机制发挥的成本节约效应。研究设置了无碳交易市场(NETS)、仅包含北京等六个碳交易试点省市的碳交易市场(PETS)和全国范围内实施碳排放权交易(CETS)三种政策情景。通过模型分析得到以下结论:(1)为实现“十二五”碳强度减排目标,扣除自然下降率,全国二氧化碳排放需要减少约6.39亿吨,占当年总碳排放的6.65%;无碳排放交易时全国需要付出约157.62亿元的减排成本,占当年GDP的0.04%;六省市参与碳交易情景下,全国总的减排成本约为150.66亿元,节约减排成本4.42%,碳交易量为0.22亿吨CO₂,占总减排量的3.39%,均衡碳价约为70.55元/吨CO₂;全国碳市场情景下,全国总的减排成本约为120.68亿元,相比于无碳排放交易情景节约减排成本23.44%,碳交易量为1.21亿吨CO₂,占总减排量的18.98%,均衡碳价约为38.17元/吨CO₂;(2)碳交易市场对参与交易的省份的成本节约效应各不相同,总的来看,东、西部地区成本节约较为明显,部分西部地区能够在完成自身减排目标前提下,通过加入碳交易市场而获取正的收益。

关键词: 省际碳交易市场模型 边际减排成本 成本节约效应 气候变化 可计算一般均衡模型

Abstract: China has proposed the carbon reduction targets for each province in its "12th Five-Year Plan". Meanwhile, several carbon emission trading pilots have begun. On this background, the cost saving effect of carbon markets in China achieving its reduction targets is studied in this paper. First, an inter-provincial emissions trading model is constructed. Then, three kinds of policy scenarios, including no carbon emission trading (NETS), the coverage of carbon market only contains six pilots (PETS), and the unified national carbon market (CETS) are designed. With simulation, some interesting results are found. First, by deducting the natural decline of carbon intensity, China's CO₂ emissions need to be reduced by about 639 million tons to achieve the reduction targets, accounting for 6.65% of the total carbon emissions. In NETS, the total abatement cost is about 15.76 billion yuan, accounting for 0.04% of GDP. Second, in PETS, the total abatement cost is about 15.07 billion yuan, which suggests that a 4.42% saving is achieved compared to that in NETS. The CO₂ trading volume in PETS is about 22 million tons, accounting for 3.39% of total reduction, and the equilibrium carbon price is 70.55 yuan per ton CO₂. Third, in CETS, the total abatement cost is about 12.07 billion yuan, a 23.44% reduction compared with that in NETS. The CO₂ trading volume in PETS is about 121 million tons, accounting for a 18.98% share of total reduction, and the equilibrium carbon price is 38.17 yuan per CO₂. Finally, the cost saving effect of the carbon market on each involved province is different. Overall, the cost saving effect of eastern and western regions is more pronounced. Moreover, some western regions can obtain positive benefits by participating in the carbon markets.

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