HARVARD PROJECT ON CLIMATE AGREEMENTS

Policy Brief

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English version begins on page 3

广东碳市场抵消机制——碳普惠制试点经验及未来展望

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《联合国气候变化框架公约》京都议定书中为发达国家实现碳减排目标引入了市场机制，包括了清洁发展机制（CDM）、联合履约（JI）和碳市场。这些市场机制的共同基础是在不同地方去除或减少的一吨二氧化碳对全球减排来说效果是一样的。随后世界各地都逐步建立起不同范围的碳市场，而抵消机制——基于项目的碳减排已成为碳市场中不可或缺的一个组成部分。2015年197个国家在巴黎召开的《联合国气候变化框架公约》第二十一届会议上通过了《巴黎协定》，《巴黎协定》第六条将建立新的全球市场减排机制，为世界各国利用国际碳市场提供一个有效的平台，其中允许各成员国使用国际交易的碳排放配额以实现其国家自主贡献目标。

根据世界银行的统计，2021年国际上正在实施的国家、区域或国内抵消机制有25个，正在建设的有6个。其中规模较大的例如加州碳市场的减排机制，到2020年底已签发2.141亿吨减排量，其平均价格也达到了每吨13.71美元的水平。而韩国碳市场的减排机制，虽然签发量不如加州，只有3353万吨，但其平均价格在20-36美元每吨的水平。[1] 通过比较这些抵消机制可以发现抵消机制的几个特点：一是其直接用途为碳市场履约，但使用比例一般不超过10%，可见抵消机制只是一个小量的补充机制；二是其范围可包括农林业、工业气体、能效、可再生能源、交通、废弃物等不同领域，具体范围由碳市场管理者决定；三是出于对本地环境效益、社区发展等考虑，在抵消机制中也会对部分项目有优先使用的条件设置。

广东省作为首批国家低碳试点省，从2013年开始启动广东碳排放权交易试点工作。碳市场主要管控高碳排放行业的大型企业，主管部门采取抓大放小的策略。那么如何推动全社会的公众、中小微企业积极参与碳减排呢？广东省在“十三五”期间开展碳普惠制试点工作，先后发布了《广东省碳普惠制试点工作实施方案》、《广东省发展改革委关于碳普惠制核证减排量管理的暂行办法》等文件。碳普惠制即大力推进全社会低碳行动，探索鼓励绿色低碳生产生活方式的普惠性工作机制。

广东碳普惠制目前有两种开展形式：一是平台模式，通过网站、APP、微信小程序等不同平台吸引公众参与低碳行动，由公众的低碳行为产生碳币、积分，并获得一定的荣誉或商

1 https://carbonpricingdashboard.worldbank.org/carbon_crediting

家购物优惠；二是项目模式，政府主管部门审核发布一系列碳普惠方法学，符合碳普惠方法学项目产生的减排量经过第三方核证以及主管部门的审核备案，可通过交易进入广东碳市场或用于扶贫公益活动、大型活动碳中和等。目前已发布的省级碳普惠方法学包括林业碳汇、安装分布式光伏发电系统、使用家用空气源热泵热水器、使用高效节能空调、自行车骑行、废弃衣物再利用等。

广东碳市场对于抵消机制的规定为每年全省使用量不大于150万吨，并且其中不小于70%须为本省产生，可使用部分国家核证自愿减排量（CCER）和广东省碳普惠制核证减排量（PHCER）。广东碳市场要求抵消机制中的项目不能来源于碳市场控排企业，不能来源于其他碳交易试点地区，其中CCER排除水电项目和来自使用煤、油、气等化石能源的发电、供热和余能利用项目。由于抵消机制每年有150万吨的使用上限，主管部门按照企业的书面申请先后顺序来允许用以抵消的项目减排量。

PHCER在广东碳市场中非常紧俏，从2017年到2021年价格从十几元涨到超过四十元每吨（相当于约从2美元涨到6美元），且要高于同期广东碳市场配额价格。主要原因包括：一是林业碳汇项目具有较好的生态效益，符合企业对于践行生态文明建设的需求。二是部分林业碳汇或光伏扶贫项目所在地和业主为山区贫困村，具有扶贫的社会效益，符合企业履行社会责任的需求；经过近几年的实践，林业碳普惠已成为生态扶贫的新路子，也是下一阶段乡村振兴的重要举措。以广东首个贫困村林业碳普惠项目为例，在韶关市翁源县翁城镇沾坑村，以村集体所有的林地作为试点，产生PHCER3046吨，交易金额33506元，作为村集体收入投入到村中的公益项目和提供更好的公共服务中。三是通过灵活、良性的碳资产管理，企业可综合运用配额、CCER和PHCER等不同产品进行碳市场履约，提高碳资产收益。在国家碳市场启动前，当时市场上存余的早期签发的CCER仍有不少且价格较低，控排企业可以合理搭配其配额、CCER和PHCER的比例，以较低的成本履约。

尽管国家主管部门从2017年3月起就暂停了CCER备案登记，但随着国家碳市场的首次履约期启动，从2021年10月起，控排企业可以在其履约中使用2017年3月前备案签发的CCER，使用比例不超过5%。到2021年底，控排企业已完成首次履约。展望未来，随着全国碳市场的正式运行，控排企业对CCER的需求也会增加，因此国家自愿减排交易机制（CCER）也将重新修订相关规定后启动。而广东碳市场面临着与全国碳市场的过渡、共存和错位发展的迫切需要。广东碳普惠制要在“十四五”取得更进一步的发展，要考虑以下几个因素：一是继续用于广东碳市场履约的抵消机制，但可使用的总量可能受限于广东碳市场规模的变化；二是在碳达峰、碳中和的背景下，市场对于可用于实现自愿减排承诺、碳中和目标的减排量趋之若鹜，广东碳普惠制要进一步研究如何将PHCER用于碳中和；三是在全球碳市场建立的过程中，广东碳普惠制要争取与国际抵消机制连接、互认，成为国际认可的抵消机制，进一步探讨和积极推动国际合作；四是应发挥城市和用于大量客户的互联网平台的主动性，进一步扩大公众和中小微企业开展低碳行动，增加获得和使用减排积分的场景，实现“普惠”的作用。

THE OFFSETTING MECHANISM IN GUANGDONG PROVINCE'S ETS: LESSONS LEARNED AND THE WAY FORWARD

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The Kyoto Protocol provided three market mechanisms for emission reductions of developed countries: the Clean Development Mechanism (CDM), Joint Implementation (JI), and emissions trading. The common foundation for these market mechanisms is that one ton of carbon dioxide (CO_2) removed or reduced has the same effect on emission reductions, regardless of where the removal or reduction took place. Emission trading schemes have been developed worldwide, and offsetting mechanisms became indispensable parts of carbon markets. 197 Parties ratified the Paris Agreement in 2015 at COP 21 in Paris; under the Agreement, a new global emission reduction scheme is being developed. The Paris Agreement provides a robust and ambitious basis for the use of international carbon markets — primarily in Article 6; the Agreement allows Parties to use international trading of emission allowances to help achieve emission reduction targets.

According to the World Bank, in 2021, 25 offsetting mechanisms have been developed worldwide, while six offsetting mechanisms are under development. Large offsetting mechanisms such as California's Emissions Trading System (ETS) issued over 214 million tons (Mt) of carbon-dioxide equivalent (CO_2e) through the end of 2020, and the average price of offsets reached USD13.71 /tCO_2e. In the Republic of Korea, even though the Korean ETS issued only 33.53 Mt CO_2e by the end of 2020, its average price reached USD20-36 /tCO_2e.[2]

An overview of offsetting mechanisms reveals several related characteristics: first, emission reduction credits from offsetting mechanisms usually constitute no more than 10% of a corporate entity's obligation to cover its emissions — with the much larger portion of emissions covered by allowances issued by the relevant jurisdiction; second, the scope of offsetting mechanisms may include agriculture and forestry, industrial gases, energy efficiency, renewable energy, transport, and waste treatment, with the exact scope being defined by the administrators of carbon markets; third, priorities are usually defined for certain types of projects considering local environmental and social benefits.

As one of the first low carbon pioneering provinces in China, Guangdong launched its carbon market in 2013. The Guangdong Emissions Trading System (ETS) focuses on the largest emitting industrial entities. To encourage the citizens and the small and medium sized entities (SMEs) unregulated by the ETS to reduce carbon emissions, Guangdong has launched and released the implementation plan for the "Tan Puhui" scheme, as well as the temporary management rules for the Puhui Certified Emission Reductions (PHCER). Tan Puhui has been defined as an inclusive voluntary emission reduction scheme, to encourage the citizens and SMEs to participate in low carbon actions, and to explore low carbon production and life styles; in return, participants in the scheme receive honorary or monetary awards.

2 https://carbonpricingdashboard.worldbank.org/carbon_crediting

Tan Puhui has two major formats: one is through internet platforms, including websites and apps — including WeChat — to encourage individuals to take low carbon actions. In return, credits are given to participant rankings and to purchase goods. The other format is through emission reduction projects, following methodologies published by the government. Projects developed according to these methodologies will generate emission reduction credits (PHCERs), if verified by third-party organizations and approved by the administration. PHCERs can be traded in the Guangdong ETS or used in offsetting emissions in large events such as conferences. So far there have been six provincial level methodologies approved by the government: forestry, small scale PV, home-used heat pump heaters, high efficiency air-conditioners, public bike-sharing, and reuse of abandoned clothing.

The Guangdong ETS has set up rules for using its offsetting mechanism. Each year no more than a total of 1.5 million tons of China Certified Emission Reduction (CCER) units and PHCERs could be used for compliance, 70% of which must be located and generated in Guangdong. CCERs from the following types of projects are excluded in compliance: projects from Guangdong ETS emitting entities and other regional ETSs; hydro power projects; and projects related to fossil fuel electricity generation and heating supply or waste heat utilization. Because there is a system-wide limit of 1.5 million tons, the government will approve the offsetting compliance request according to the orders of submission in writing.

The price of PHCERs from 2017 to 2021 has increased from around RMB 10/tCO_2e to RMB 40/tCO_2e (equivalent to about USD 2/tCO_2e to USD 6/tCO_2e), which was also higher than the Guangdong Emission Allowance (GDEA). PHCERs becomes increasingly favorable for investors due to several reasons: first, some forestry PHCERs have additional ecological benefits, which meet the needs for companies to show their contribution to sustainable development. Second, some PHCERs from forestry or solar projects were generated in rural villages that were still in poverty, therefore buying such PHCERs helped companies to carry out social responsibility.

Take the first forestry project in a poor village in Shaoguan City for example, with the forests owned by the village community. The project produced 3,046 tons of PHCERs and traded for about RMB 33506 yuan (equivalent to about 4,500 USD). This income helps the village to invest in public projects and provides better community services. The third and perhaps the most important reason is that companies could create a portfolio of carbon assets for their compliance, including GDEA, CCER, and PHCER, which reduces overall costs and enhances investment returns. Prior to the first compliance cycle of national ETS, some CCERs from previous projects are sold at relatively low prices, therefore companies can calculate the percentages of GDEA, CCER and PHCER to be used in compliance at the minimum cost.

Even though the CCER program has been suspended since March 2017, CCERs generated before this date can be used in the first compliance cycle of China's national ETS from October 2021. By the end of 2021, key emitting entities covered in the national ETS have completed the first compliance cycle and can use no more than 5% of CCERs in their compliance. Looking ahead, CCER will re-initiate as the national ETS continues operating, because the need for more CCERs to be issued will increase. The Guangdong ETS is at a crossroads where it has to either develop differently and remain independent from the national ETS, or become a part of the national ETS. Therefore the offsetting mechanism in Guangdong also faces great challenges for further development.

Three key aspects could be considered in the next steps: first, PHCERs can be used continually in Guangdong ETS, while the total amount will be constrained due to the size of Guangdong ETS; second, with the national targets of peaking CO_2 emissions by 2030 and carbon neutral by 2060, Guangdong needs to study how to use PHCER in the broader scope of carbon offsetting, because more and more companies have the need for carbon-neutral commitments; third, in the development of global carbon market, Guangdong Tan Puhui can actively connect with international offsetting mechanisms, and aims to become an internationally recognized offsetting program; fourth, Tan Puhui can continue to develop at the city level and on internet platforms, which have large numbers of users, hence more people and SMEs can take low carbon actions and receive credits for rewards in more scenarios. That is the spirit of inclusive voluntary emission reduction scheme — everyone can take actions to reduce carbon emissions and gain rewards from low carbon actions.

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ABOUT THE HARVARD PROJECT ON CLIMATE AGREEMENTS

关于哈佛气候协议项目：哈佛气候协议项目（简称哈佛项目）是成立于2007年的一个哈佛大学校级倡议，旨在识别和推进应对全球气候变化的科学合理、经济可行和政治务实的公共政策选择。哈佛项目依托世界各地主要学者领袖，对国内外气候变化政策的政策架构、关键设计要素和制度层面进行研究。哈佛项目由哈佛大学肯尼迪学院A. J. 迈耶（A. J. Meyer）能源与经济发展教授 Robert N. Stavins 领导。更多信息请访问哈佛项目网站：www.hks.harvard.edu/hpca。

The Harvard Project on Climate Agreements is a Harvard-University-wide initiative established in 2007 to identify and advance scientifically sound, economically sensible, and politically pragmatic public policy options for addressing global climate change. Drawing upon leading thinkers from around the world, the Harvard Project conducts research on policy architecture, key design elements, and institutional dimensions of international and domestic climate-change policy. The Harvard Project is directed by Robert N. Stavins, A.J. Meyer Professor of Energy and Economic Development, Harvard Kennedy School. For more information, see the Harvard Project's website: www.hks.harvard.edu/hpca.

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