

Press Release

## 2021-2022 Chinese Cities Carbon Peak & Carbon Neutrality Index Report Released in Beijing

The rapid development of distributed photovoltaic has become a new highlight for “dual carbon” action

On July 27<sup>th</sup>, 2023, a seminar on “Promoting Coordinated National Response in ‘Dual Carbon’ Efforts, Chinese Cities are in Action” was held in Beijing. At the seminar, the Chinese Research Academy of Environmental Sciences (CRAES) and the Institute of Public & Environmental Affairs (IPE) released the “2021-2022 Chinese Cities Carbon Peak & Carbon Neutrality Index (CCNI) Report” (hereinafter referred to as the “Report”), which systematically evaluates the progress of “dual carbon” actions in 110 cities across China from three dimensions: Climate Ambition, Low Carbon Status, and Emission Trends.

The evaluation results show that Shenzhen topped the list, followed by Chengdu and Qingdao. The rest of the top ten cities are Beijing, Ningbo, Wuhan, Xiamen, Kunming, Shanghai and Guangzhou. Ningbo, Yancheng, Jiangmen and Weihai have made great improvements compared to last year’s scores. The scores of Lianyungang and Wenzhou declined. Moreover, Yulin, Ma’anshan, Rizhao, Wuhu and Jincheng have low rankings.

XIE Minghui, the main administrator of the Management Center of CRAES, delivered a speech at the seminar. ZHUANG Guiyang (Deputy Director of Research Institute for Eco-civilization of Chinese Academy of Social Sciences (CASS)), CHAI Qimin (Director of International Cooperation Department in National Center for Climate Change Strategy and International Cooperation (NCSC)), SHI Minjun (Director of the Center for Low Carbon Cities), and TAN Qingliang (Director of the Climate Division of the Shenzhen Bureau of Ecology and Environment) attended the seminar and delivered speeches. Evaluating the progress of “dual carbon” action in key cities and making recommendations for action is a powerful initiative to actively implement the national “dual carbon” strategy.

Studies have shown that cities are the centers of human socio-economic activity and the main source of carbon emissions. Globally, the total economic output of cities accounts for 80% of global GDP, energy consumption accounts for 67%-76% of the global total, and carbon emissions account for 71%-76%. In China, carbon emissions from cities account for 85% of the country’s total, so cities have the primary responsibility for implementing the national “dual carbon” “1+N” policy. Evaluating the progress of “dual carbon” actions in key cities and making recommendations for action are effective measures to actively implement the national “dual carbon” strategy.

According to Ma Jun, Director of IPE, the total score of 110 cities has increased compared to last year's evaluation, indicating the new progress of "dual carbon" actions in urban areas under the guidance of the national "dual carbon" policy, which also implies the sustained and continuous efforts we need to make to achieve "dual carbon" targets under the complex and changing global situation.

The report summarizes 4 outstanding improvements made by the participating cities during this period of "dual carbon" action.

The first is the rapid development of distributed photovoltaic, which has become a highlight of energy transformation in the mid-eastern part of China. In the year of 2022, 51.11 million kW of distributed photovoltaic has been implemented, accounting for more than 58% of the total photovoltaic implemented in that year. The construction of distributed photovoltaic is spreading from Hebei, Henan, Shandong to southeastern coastal provinces such as Zhejiang, Jiangsu and Guangdong. The extraordinary development of distributed photovoltaic has increased the proportion of non-fossil energy consumption in 110 cities, helping to alleviate the contradiction between energy supply and consumption mismatch, and giving strong impetus to the energy transition of key cities in east-central China.

The second progress is that the penetration rate of new energy vehicles has increased significantly, reaching the target of the 14th Five-Year Plan

ahead of schedule. In 2022, 5.249 million units of new energy vehicles were sold nationwide, and the penetration rate of the narrow passenger car market reached 25.5%, with a growth rate of 85%. The average penetration rate of new energy vehicles in the 110 cities in 2022 reached 23.6%, which is slightly lower than the national average, but compared with the average penetration rate of 12.2% in 2021, it shows a substantial increase of 93%, with a growth rate higher than the national average, and achieved the national “14th Five-Year Plan” target of 20% ahead of schedule.

The third progress is that the emission reduction trend of the 110 participating cities is better than the national average. In terms of carbon emission intensity, the carbon emission intensity of the 110 cities has decreased by an average of 21.7% in 2020 compared with 2015, which is better than the national decrease of 18.8%. In terms of total emissions, the average carbon emission growth rate of the 110 cities from 2016 to 2020 is 0.58%, which is significantly lower than the national carbon emission growth rate of 2.92% estimated by academics.

Fourth, the decoupling of carbon emissions from economic growth has begun in some cities; the decoupling index of 110 cities shows that 43% of the cities have strong decoupling of carbon emissions from economic growth, while 31% have weak decoupling, indicating that the relationship between economic growth and carbon emissions is undergoing a transformation in a number of cities, and that the quality of their

development is gradually improving.

Meanwhile, the report also highlights challenges in 4 dimensions.

The first is the need for better synergy between carbon and pollution reduction. Research has shown that urban air pollution, mainly PM<sub>2.5</sub>, is highly consistent with the intensity of urban carbon emissions, and that there is a need to synergize the promotion of "dual carbon" action and the battle to protect blue skies. At present, China's national basic conditions of heavy industry structure, coal-based energy structure and highway-based transportation structure have not yet been fundamentally changed, and the total pollutant emissions still exceed the environmental capacity. All these are difficult to be solved by end-of-pipe management and need to be mitigated by structural adjustment driven by "dual carbon" strategies. Comparing the emission trend sub-index score in the current CCNI with the PM<sub>2.5</sub> reduction rate in the same period, we can see that the correlation between the two is not significant, which means that the "dual carbon" actions of more cities have yet to be effectively synergized with air pollution control.

The second challenge is the need for further clarification of carbon peak targets and "dual carbon" action pathways for key cities. This round of evaluation shows that most cities have yet to clarify their carbon peak targets, and only two cities have announced their carbon neutrality targets. With less than seven years to reach the national carbon peak target, the lack

of targets and pathways related to “dual carbon” in cities, and the lack of predictability for low-carbon transformation and green investment and financing are not conducive to guiding the participation of all sectors of the community.

As for the third, the difficulty of controlling carbon emissions under multiple targets has increased, and the performance of large industrial cities with high carbon emissions has been unsatisfactory. The top 10 cities with high carbon emissions accounted for 30% of the total emissions of 110 cities. Among them, Tangshan, Yulin, Yinchuan, Binzhou and Baotou, the traditional heavy industrial cities, performed poorly in the evaluation. Suzhou, the world’s largest industrial city, also has much room for improvement in its low carbon status and emission trend score. How to realize the decoupling of economic development and carbon emissions under the condition of remaining a global manufacturing power will be a difficult challenge for China in the long run.

The fourth challenge is the inadequate disclosure of energy statistics, and the disclosure system of carbon emission statistics needs to be unified. We still need the open access data on energy consumption structure, energy consumption for all industries and other relevant indicators. Among them, data on clean and renewable energy consumption is the most lacking. The lack of disclosure of energy and carbon emission information would create barriers for carbon peaking and reduction project in the future, leading to

negative impact on the reliability of “dual carbon” project and government credibility.

In response to the identified challenges, Dr. YANG Pingjian, Director of Environmental Sociology Department of the CRAES, said that the “dual carbon” target is designed from a national perspective, and that there is no need to have a universal standard for each region, but all regions should cooperate with other parts of the country instead of working completely alone. Each region needs to find its position in this national game of “dual carbon”, seize the opportunities of renewable energy industries by making full use of its own advantages, and synergistically achieve carbon reduction, pollution reduction, greening and growth by promoting energy substitution, industrial decarbonization, low-carbon buildings, transportation and zero-waste cities, as well as expanding forest and marine carbon sinks.

To help cities better implement the national “dual carbon” “1+N” policy system, Dr. YANG made 6 suggestions on behalf of his team. The first is to clarify the carbon peak targets based on their own situations, and pursue the synergistic development of carbon reduction, pollution reduction, greening and growth. As a result, detailed work plans and roadmaps should be drawn up to guide the whole society to work collectively.

The second is to promote the development and application of distributed energy to accelerate energy substitution and promote electricity

substitution on the energy consumption side to support the decoupling of energy supply and socio-economic development.

The third is to unleash the energy saving and carbon reduction potentials of corporations, and promote the synergistic development of pollution and carbon reduction for industries.

The fourth is to clarify the timetable for banning the sale of conventional fuel vehicles. Moreover, the initiative of cities in promoting transportation restructuring should be used to promote the popularization of new energy vehicles and energy-saving vehicles in accordance with local conditions.

The fifth is to standardize urban energy and carbon emission statistics and improve information disclosure systems.

The sixth is to help citizens transition to greener lifestyles and build zero-carbon communities by emphasizing the classification of household waste.

In addition, the research group also made 5 suggestions for the authorities to implement the “dual carbon” action. First, refine the “coordinated national response” in promoting the “dual carbon” work plan through top design. Second, establish “dual carbon” evaluation and assessment systems to encourage capable cities to take the initiative and lead the way. Third, establish “dual carbon” statistics and information disclosure system, and improve the capacity to calculate and measure



carbon emissions. Fourth, carry out the construction of pilot cities for carbon peaking and carbon neutrality to encourage backward cities to follow the pace of advanced cities. Fifth, promote the highly concentrated talents, capital, technology and other resources of eastern cities to dock with the rich renewable energy resources of western cities, form an east-west partnership pattern to promote linkage development, and promote the “coordinated national response” at the city level.

In his speech, XIE Minghui, the main administrator of the Management Center of the CRAES, said that the realization of the “dual carbon” goal is a time-critical and heavy task that requires the joint efforts of the whole society. He called on the government, research institutions, enterprises, social organizations, the media, the public and other stakeholders to give full play to their own initiative, match the needs, strengthen cooperation and synergy, and contribute their wisdom and strength to the realization of the “dual carbon” target and the high-quality development of the economy and society.

In the viewpoint exchange session, ZHUANG Guiyang, Deputy Director of the Research Institute for Eco-civilization of the CASS, said that the “coordinated national response” is a particularly important principle of the “1+N” policy system, and that it is necessary to promote carbon peaking and carbon neutrality in batches. Pilot is the magic weapon of China’s public policy making, three batches of low-carbon city pilots

have been carried out since 2010, and now it seems that the pilot areas have better results than non-pilot areas. However, the incentives and constraints were still weak, and areas with particularly strong independent innovation capabilities, such as Shenzhen, Chengdu and Beijing, performed particularly well. After the “dual carbon” target is proposed, it is necessary to shift from weak constraints and weak incentives to strong constraints and strong incentives, to guide the city to a higher vision, to stimulate independent innovation, and to form the driving force for early and pilot implementation. He suggested that the CCNI evaluation should be continued to help cities put “dual carbon” efforts into practice.

According to CHAI Qimin, Director of the NCSC, the CCNI provides a panoramic view of the city-level work at a very fine granularity, like a medical checkup, and systematically evaluates the existing foundation and future potential of more than one hundred cities to promote this work, as well as the major directional issues including the policies and willingness to take action, thus laying a very good foundation for the work in the next stage. It has laid a good foundation for the next phase of work. Mr. CHAI suggested that the CCNI evaluation should be carried out on an ongoing basis, and that consideration should be given to integrating it with pollution prevention and control indicators, so as to provide a more comprehensive evaluation of the green development of cities in terms of pollution reduction and carbon reduction.

SHI Minjun, Director of the Center for Low Carbon Cities at Zhejiang University, believes that the Report's combination of multiple dimensions, such as subjective initiative and the state of reality, as well as dynamic changes in climate ambition, is an innovative attempt, and that the scope of data collection has been broadened compared to many evaluations. He suggested that more in-depth efforts should be made to distill experience from the pilot work of national low-carbon cities to generate more and better policy insights. He also made useful suggestions on the Report's service goals, the sustainability of indicators, and the boundaries of evaluation objectives.

In this round of evaluation, Shenzhen topped the list with the best performance. TAN Qingliang, Director of the Climate Division of the Shenzhen Bureau of Ecology and Environment, said he was encouraged by the top score of CCNI. Director TAN shared Shenzhen's practices and experiences in using the legislative power of the Special Administrative Region to carry out technological innovation, market innovation, promotion of new energy vehicles, as well as the construction of near-zero carbon pilot projects, etc. At the same time, he said that from the expert group's evaluation of Shenzhen, he saw that there is still a lot of room for improvement and a lot of work to be done, and he will keep up the good work.

Director LIU Xin of the Energy Foundation believes that as a social

third-party evaluation, the Report is comprehensive, systematic and in-depth, and that the evaluation system covers the combined impact of human efforts, natural conditions, and the stage of economic development in each city, affirming the achievements but also objectively analyzing the problems, and making targeted recommendations to the cities and industry authorities. The wealth of data in the Report also reflected the degree of openness of “dual carbon” information in society. He suggested that cluster analysis and research should be strengthened to promote mutual learning among similar cities, and that indicators such as institutional mechanism innovation, synergy of multi-factor pollution and carbon reduction measures, and active public participation in “dual carbon” behaviors should be improved.

Media reporters from People’s Daily, People’s Daily Overseas Edition, Environmental Protection Magazine, China Environmental Protection, Economic Observer, China Chemical Industry News, Southern Weekend and other guests discussed and exchanged ideas, and proposed to strengthen publicity and promotion, collect typical cases of cities, and better encourage and guide the promotion of the “dual carbon” work in cities.

Based on the theory of green, low-carbon and recycling development and the key factors affecting carbon emissions, the CCNI takes into account the carbon emission fields of energy, industry, transportation and

living, and comprehensively evaluates the cities' response to the national "dual carbon" strategy by adopting the decision maker's allocation method to assign corresponding weights to the indicators of all levels, from the carbon peak target, the carbon neutrality target, the proportion of non-fossil energy consumption, and the carbon emission trend.